J. HARTNESS.

Balloons.

No. 151,124. Patented May 19, 1874.

Fig. 1.

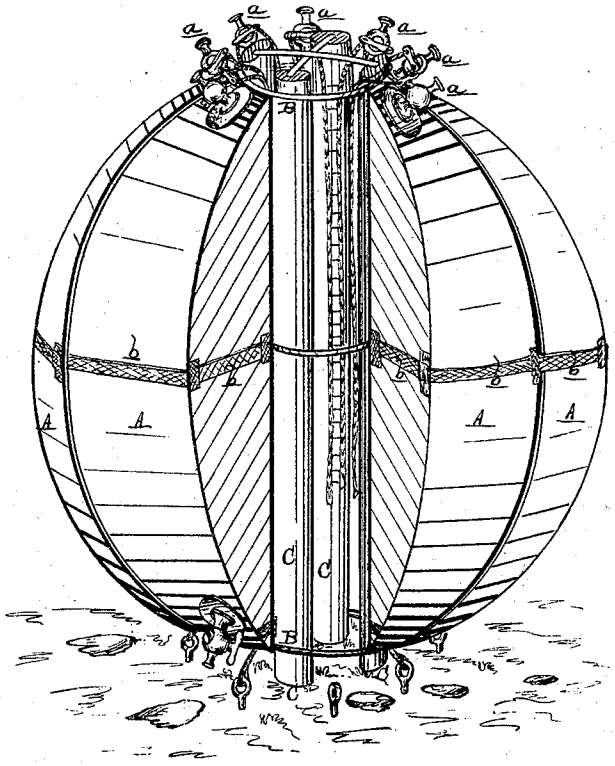
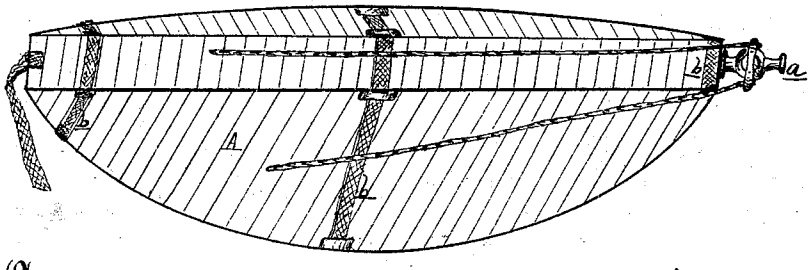


Fig. 2.



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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

JAMES HARTNESS, OF DETROIT, MICHIGAN.

IMPROVEMENT IN BALLOONS.

Specification forming part of Letters Patent No. **151,124**, dated May 19, 1874; application filed April 14, 1874.

To all whom it may concern:

Be it known that I, JAMES HARTNESS, of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Balloons, of which the following is a specification:

This invention has for its object to construct a balloon of much greater capacity and buoyancy than has heretofore been found practicable without increasing its weight and decreasing its strength to resist internal pressure in the same ratio; and it consists in constructing the balloon of a series of spherical or spheroidal sectors, each being adapted to contain the gas, and provided with the necessary valves; all the sections being united and inclosed by the netting from which the car is suspended, the aggregate buoyancy of the sections being greater than can be secured in a single balloon of ordinary construction.

Figure 1 is a perspective view of the balloon, inflated, one of the sections being removed, as is also the netting. Fig. 2 is a detached perspective view of one section, inflated.

In the drawing, A represents sectional balloons, each in the form of a spherical sector, six or eight of which sectors may form a sphere when put together. Each section is provided with its own valve *a*, and the necessary cords to operate it. The sections do not extend to and meet in the axis of the sphere, but are cut off a little short of it to leave an axial opening through the sphere, with an iron or steel ring, B, at top and bottom, and one or more intermediate rings in the opening, to which rings the sections are separately secured by straps *b* passing around them. A rope-ladder, *c*, may extend up from the car to the top ring, so that the aeronaut may have access to the valves if he desires to.

The balloon may be safely and easily inflated over four guide-poles, *c*, which are inclosed by the rings B during the process, and from which the balloon rises when cut loose.

The netting incloses all the sections, and from it the car is suspended in the usual manner.

The fabric used in constructing the sections may be very light, yet the internal pressure in each being very small there is little or no danger of rupture.

A light fabric may inclose the sectors inside the netting, and any one of the sections may be ruptured without affecting in the least the buoyancy of the others.

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

A balloon constructed of spherical or spheroidal sectors, each sector being adapted to contain gas, and provided with a valve, the whole being inclosed by the netting, substantially as described.

JAMES HARTNESS.

Witnesses:
C. E. HUESTIS,
H. S. SPRAGUE.