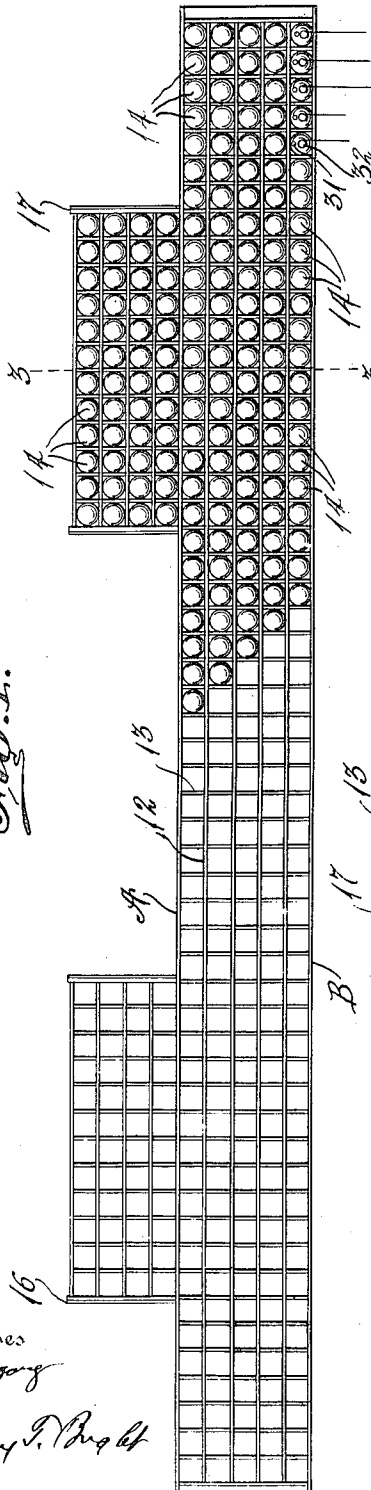


993,948.

Patented May 30, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Jos. H. H. H. H.
Henry P. H. H.

Fig. 4.

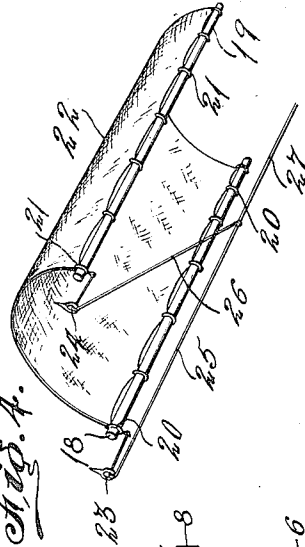
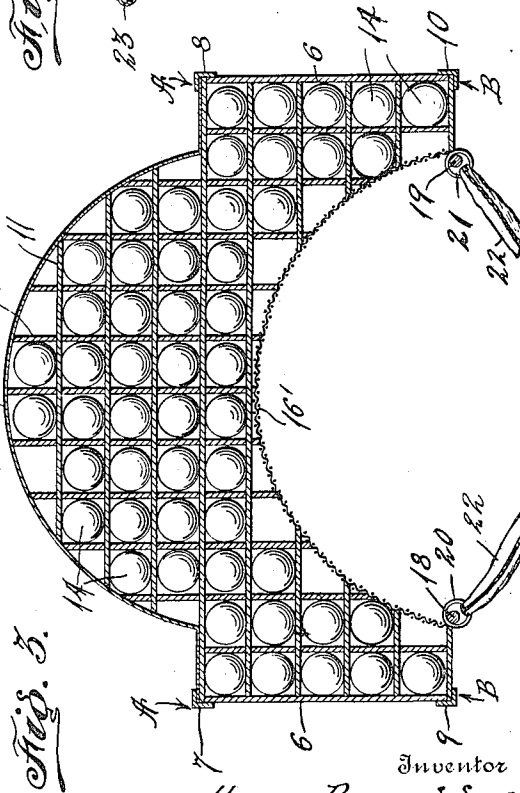


Fig. 5.



Inventor
Henry Bernegger

By *Charles H. H. H.*

Attorneys

H. BERNEGGER.

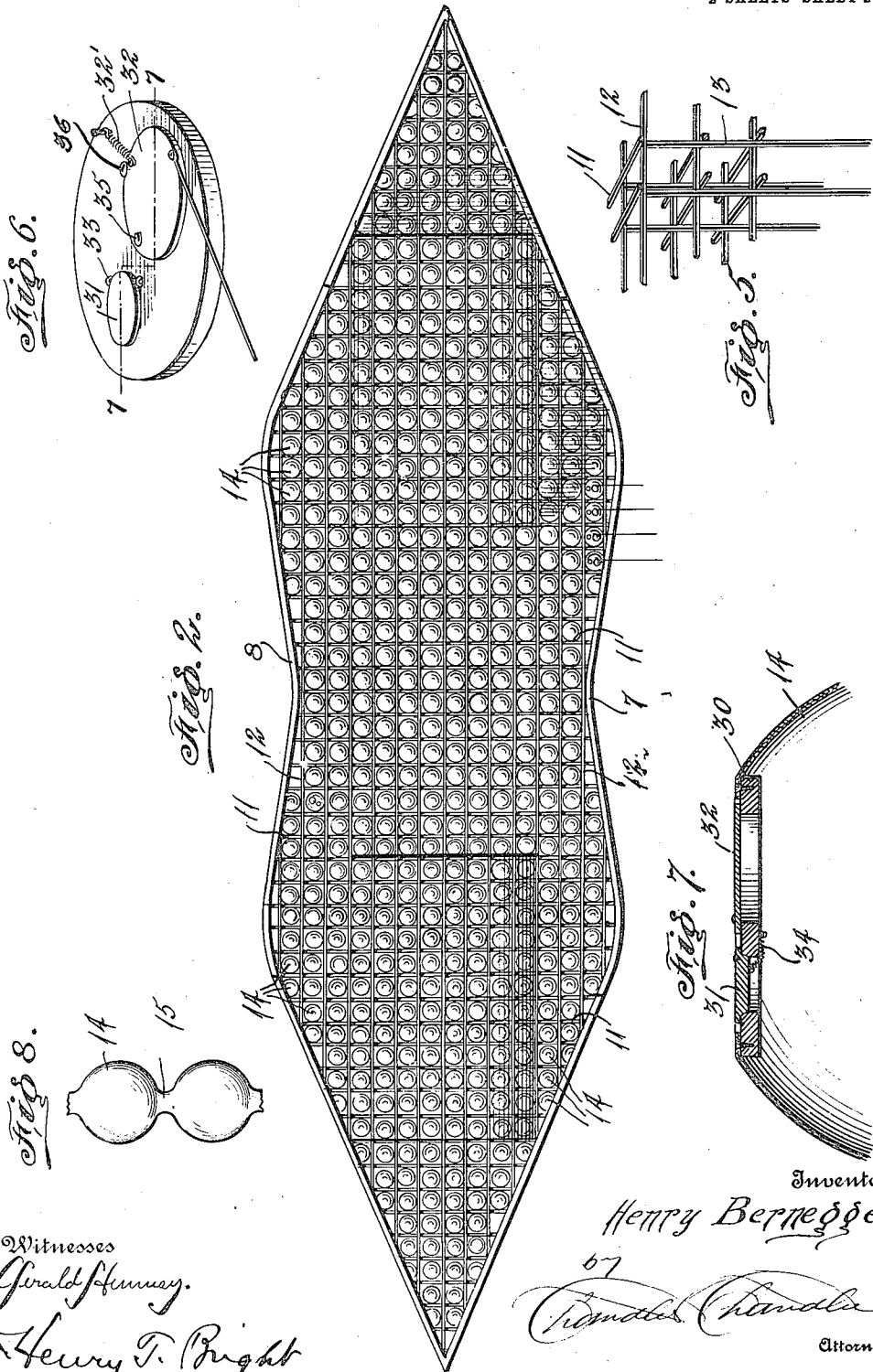
BALLOON.

APPLICATION FILED FEB. 25, 1910.

993,948.

Patented May 30, 1911.

2 SHEETS—SHEET 2.



Witnesses
Gerald H. Hunsay.
Henry T. Bright

Inventor
Henry Bernegger
67
Thomas Chanda
Attorney

UNITED STATES PATENT OFFICE.

HENRY BERNEGGER, OF WEST NEW YORK, NEW JERSEY.

BALLOON.

993,948.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed February 25, 1910. Serial No. 545,866.

To all whom it may concern:

Be it known that I, HENRY BERNEGGER, a citizen of the United States, residing at West New York, in the county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Balloons; 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 balloons and particularly to that class which are utilized to form a component part of a motor propelled air ship.

The object of the invention is the provision of a balloon of the character named in which the resistance of the air will be reduced to a minimum during navigation and which embodies a structure adapted to enhance the safety of same during varying conditions which may arise when in use.

A further object of the invention resides in so constructing the balloon of a plurality of component parts each of which is independent of the other so that when one is damaged the remainder will be unaffected, thus reducing the cost of repair and enabling the continued use of the balloon without the immediate effecting of said repair.

With the above and other objects in view, the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully described and set forth in the claims.

In describing the invention in detail reference will be had to the accompanying drawings wherein like characters of reference denote corresponding parts in the several views, and in which:

Figure 1 is a side elevation of a balloon constructed in accordance with the invention; Fig. 2, a top plan view of same; Fig. 3, a section on the line 3—3 of Fig. 1; Fig. 4, a detail perspective view of the parachute structure in active position located at one end of the balloon, a similar parachute being located at the other end; Fig. 5, a detail view of a fragment of the body of the balloon; Fig. 6, a detail perspective view of the uppermost section of one of the gas bags showing the valved top thereof; Fig. 7, a section on the line 7—7 of Fig. 6; and,

Fig. 8, a detail view of a fragment of one of the gas bags.

Referring to the drawings, the balloon is illustrated as constructed of upper and lower parallel spaced frame members A and B, respectively, which are supported in proper relation to each other by a plurality of uprights 6. The frames A and B are identical in shape having substantially the formation of a boat with their intermediate portions depressed inwardly. The central portion of the frame A has its sides respectively formed of the steel strips 7 and 8, while the terminations of the said sides 7 and 8 are of light wood construction such as bamboo; likewise the frame B, has its sides formed centrally of the steel strips 9 and 10, the terminations of which are also of light wood construction. It will be noted, however, that in case it is desired the sides of the frame A and B may be constructed of steel throughout their entire length. Connecting the uprights 6, transversely of the balloon are a series of horizontally disposed strips 11, of light wood construction, while a series of longitudinally disposed light wood strips 12, are connected to the cross strips 11, and have their terminals secured to certain of the uprights 6. A series of vertical strips 13, are supported by the longitudinally disposed strips 12 and transversely disposed strips 11, and thus completing the interior framework of the balloon which is formed of a series of vertical and horizontally alined skeleton frames in which are mounted the gas bags of the balloon. Each of said gas bags is formed of a plurality of spherical members 14, preferably five in number, the adjacent members of each bag being connected together by a neck 15. When the various gas bags are disposed within the frame-work of the balloon, the members thereof are in vertical alinement and the bag as a whole is secured in place by suitable connections between the lowermost members thereof and the lowermost transversely and longitudinally disposed strips 11 and 12, respectively. The uppermost spherical member of each gas bag is provided with a head formed of a circular disk 30, of any suitable light material such as wood and provided with a pair of apertures, one of which is closed by a vertically

movable valve 31 and the other by a horizontally movable valve 32. The valve 31 is hinged to the disk 30 as at 33 and is held normally in closed position by a spring 34 which has one end attached to the under face of the valve 31 and the other end secured to the under face of the disk 30. The function of the valve 31 is to open under excessive pressure to prevent bursting of the bag, the spring 34 being set at any desired tension. The horizontally movable valve 32 is pivoted to the head 30 at 35 and a spring 32' having one end secured to the edge of said valve and the other to the disk 30 tends to normally hold the valve in closed position and disposed against a stop pin 36 in the upper face of the disk 30. Secured to the valve 32 at a point opposite its engagement with the spring 32' is a pull cord adapted to extend down to the car of the balloon for manual operation by the aeronaut. Through the utilization of the valve 32 the quantity of gas in any gas bag can be reduced independently which will serve to effect a landing or preserve the equilibrium of the balloon.

At corresponding points at the head and tail of the balloon, there is formed similar dome-shaped structures 16 and 17 respectively, the base of said structures being concaved to correspond with the convexity of the top thereof. Secured at each termination of the base of the dome 17, are the longitudinally disposed rods 18 and 19, upon which are mounted for longitudinal movement a plurality of rings 20 and 21 respectively, and supported by said rings is a textile fabric 22, of a desired constituency. It will of course be understood that the last rings are fastened to their respective rods. Supported in a suitable manner on the frame-work of the balloon just forward of the rod 18, is a ring 23, while a corresponding ring 24, is supported forwardly of the rod 19, and a flexible connection 25, passes through the ring 23, and has one end secured to the forward ring 20, on the rod 18. Another flexible connection 26, passes through the ring 24, and has one end secured to the forward ring 21, on the rod 19; said connections 25 and 26, are then joined so as to terminate in a common pull cord 27, which leads to the car carried by the balloon. As the structure disposed beneath the dome 16, is identical with that just set forth a detail description of the same is deemed unnecessary. The dome structures 16 and 17 are each covered throughout their extent with a suitable netting 16' against which the textile fabric 22 is disposed when utilized as a parachute, the netting thus serving to reinforce the textile and prevent the latter from being torn or ruptured from the force of air thereagainst. The position of the domes 16 and 17 are such as to be disposed in the cen-

ter of gravity of each longitudinal half of the balloon, respectively, so as to assist in maintaining the desired equilibrium when the parachutes are spread therein.

Under normal conditions, the textile fabric 22, and the rings 20 and 21, which carry same, are disposed at the inner end of the rods 18 and 19. However, should an accident occur and a tendency arise for the balloon to fall to the ground with too great force, the operator in order to retard such downward movement of the balloon will only have to pull the cords 27, when the textile fabric will be spread beneath the base of the dome and assume the position shown in Fig. 4, thus producing a parachute and effecting a safe and easy landing for the aviators. It will also be apparent that by constructing the balloon in the manner before described of a plurality of independent gas bags, formed of a series of inter-connected spherical members, a free passage of the air during navigation between the various gas bags will be permitted, thus reducing the resistance offered to the movement of the balloon and greatly enhancing the speed thereof. Likewise it will be apparent that an accident to one of the gas bags of the balloon will be absolutely without effect on the stability thereof, with a resultant increase of safety to the passengers carried, and at the same time enable proper repair to be made to the damaged part without inconvenience and at a trifling cost.

In order to prevent possible wearing of the circular sections of each balloon by the wooden strips 11, 12 and 13, same may be constructed of water-proof fabric of sufficient stanchness to accomplish all the purposes of the wooden strip.

While one form of carrying the invention into practice has been illustrated and described it will be understood that various changes in details with respect to the construction and combination of parts may be resorted to without departing from the spirit of the invention.

What is claimed is:

1. A balloon comprising a body having its bottom provided with corresponding concaved portions located adjacent the head and tail of said body, a fabric supported upon the bottom of said body and means for spreading said fabric beneath the concaved portion thereof.

2. A balloon comprising a body having its bottom provided with corresponding concaved portions located adjacent the head and tail of said body, supporting members disposed longitudinally of said concaved portion of the body, a fabric carried by said supporting members and means for spreading said fabric beneath said concaved portion.

3. A balloon comprising a body having its

bottom provided with corresponding concaved portions located adjacent the head and tail of said body, a pair of supporting rods carried by said body and disposed longitudinally of each of said concaved portions, 5 rings mounted on each of said supporting rods and adapted for longitudinal movement thereon, a fabric supported by said rings, and connections for moving said rings longi-

tudinally of the supporting rods whereby 10 said fabric is spread beneath the concaved portion of the body.

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

HENRY BERNEGGER.

Witnesses:

GEORGE SCHROAEZLER,
JOHN NEFF.