

March 31, 1931.

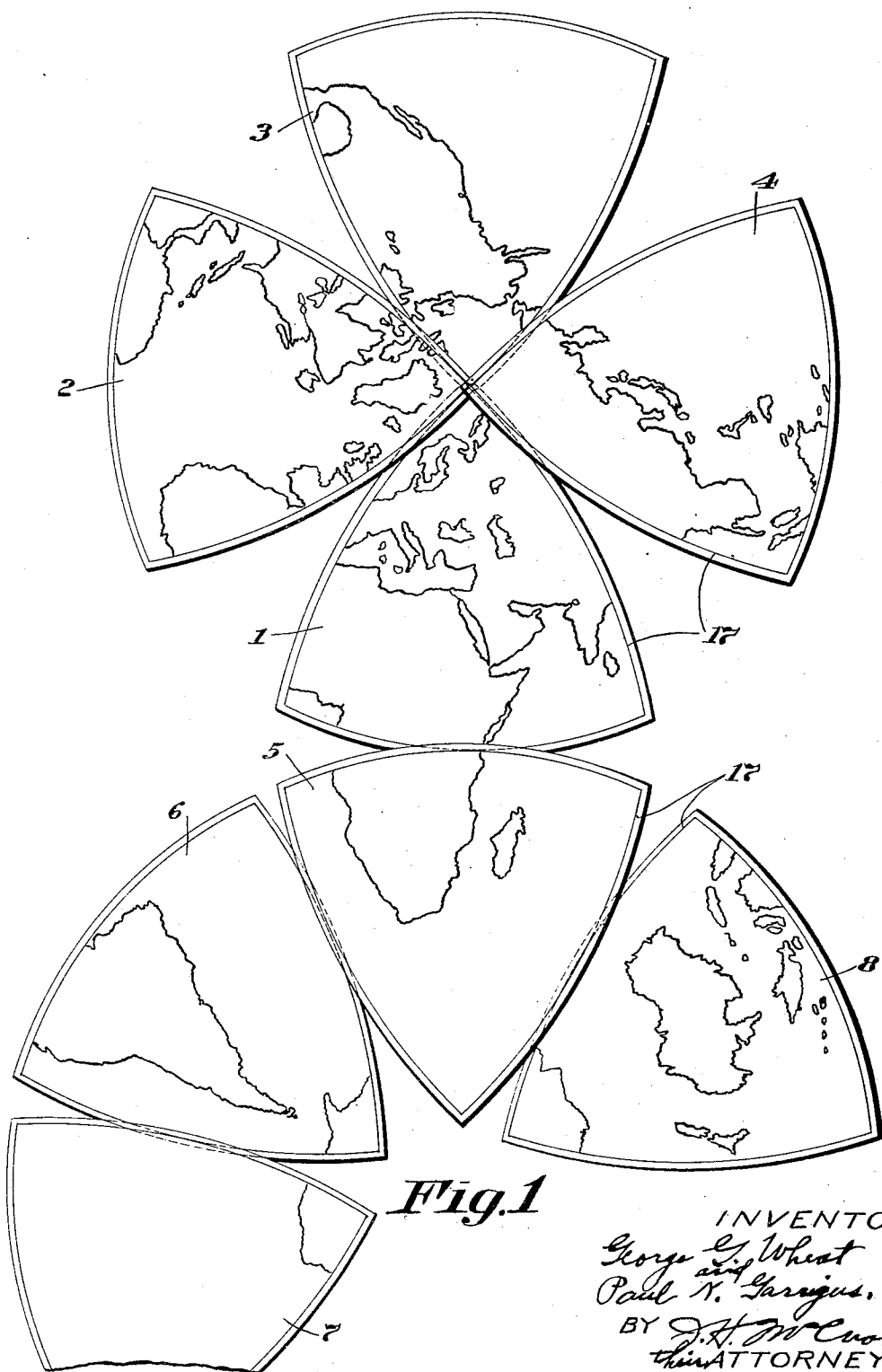
G. G. WHEAT ET AL

1,798,644

INFLATABLE GLOBE AND PROCESS OF MANUFACTURING SAME

Filed Oct. 20, 1927

3 Sheets-Sheet 1



March 31, 1931.

G. G. WHEAT ET AL

1,798,644

INFLATABLE GLOBE AND PROCESS OF MANUFACTURING SAME

Filed Oct. 20, 1927

3 Sheets-Sheet 2

Fig. 2

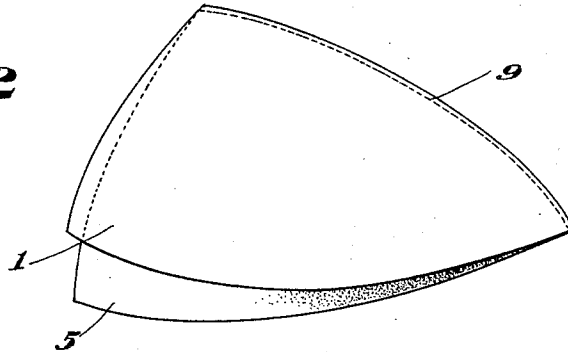


Fig. 3

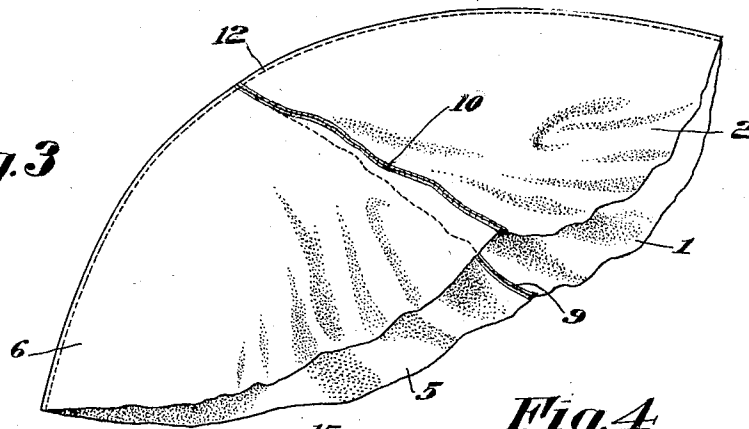
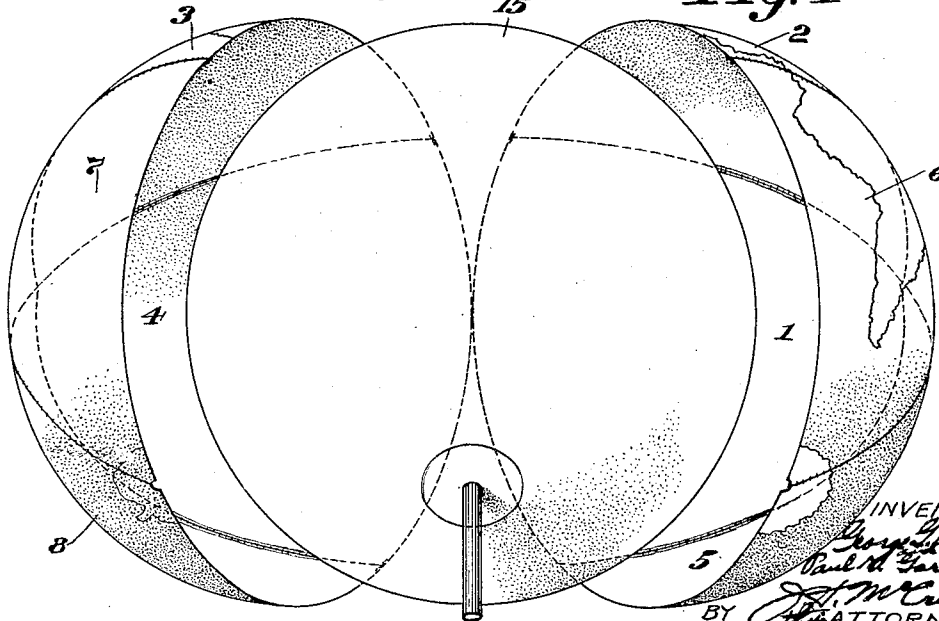


Fig. 4



INVENTORS
G. G. Wheat
Paul M. Garrigue
BY *J. M. Cuddy*
ATTORNEY

March 31, 1931.

G. G. WHEAT ET AL

1,798,644

INFLATABLE GLOBE AND PROCESS OF MANUFACTURING SAME

Filed Oct. 20, 1927

3 Sheets-Sheet 3

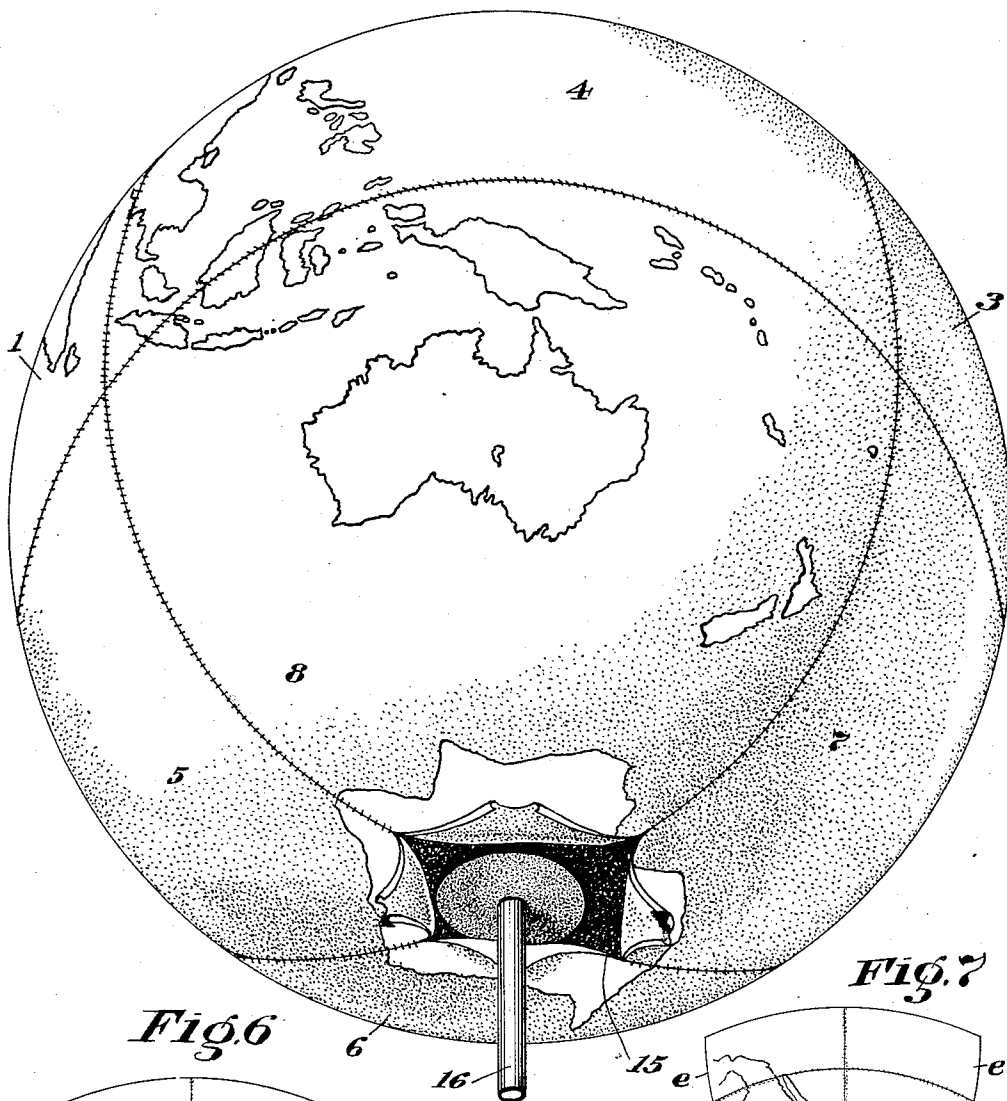


Fig. 6

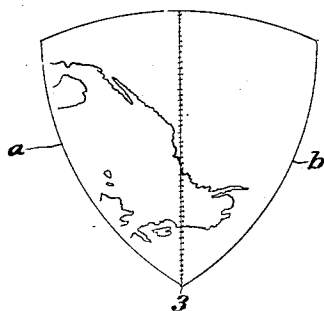
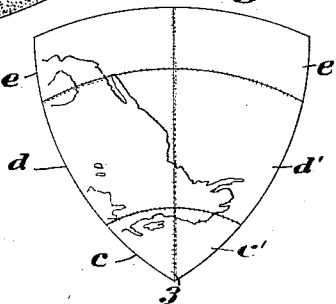


Fig. 5

Fig. 7



INVENTORS
George G. Wheat
Paul W. Garrigue,
BY J. M. Crody,
ATTORNEY

UNITED STATES PATENT OFFICE

GEORGE G. WHEAT, OF ROCKPORT, MASSACHUSETTS, AND PAUL N. GARRIGUS, OF
NEW YORK, N. Y.

INFLATABLE GLOBE AND PROCESS OF MANUFACTURING SAME

Application filed October 20, 1927. Serial No. 227,504.

This invention relates to inflatable globes, especially those intended for giving instruction in geographical subjects.

Globes of this general type were proposed many years ago and their advantages over globes of the usual construction are readily recognized. They have not, however, been used to any substantial extent, so far as we have been able to learn, due largely to the fact that such constructions have been very inaccurate, the representations of portions of the earth's surface and their relations to each other being badly distorted. The present invention aims to overcome this objection, and to devise an economical method of manufacturing articles of this character.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a plan view illustrating the parts or units from which the outer covering of the globe may be made;

Figs. 2, 3 and 4 are perspective views illustrating different steps in the method of manufacturing such a covering;

Fig. 5 is a perspective view of a globe nearly completed; and

Figs. 6 and 7 are plan views of modified cover units.

A globe of the preferred construction comprises an outer covering made of relatively inelastic fabric or other sheet material, and a rubber bladder or ball enclosed in this covering and inflated to fill out and stretch the covering tightly. The invention involves both a novel construction of the outer covering and also a new method of making such a covering.

According to the method illustrated, the covering is made by cutting out eight separate or independent parts or units of relatively inelastic sheet material, such, for example, as a medium weight rubberized duck. Each of these parts, as shown, has approximately the shape of an equilateral spherical triangle. Referring to Fig. 1, the eight sec-

tions are indicated by the numerals 1 to 8, inclusive. Usually it is preferable to have the rubberized surface outside, and the representations of the continents and other parts of the earth's surface are printed on the rubberized surface of each part or unit while it is flat. This may be done either after the sections are cut out or before the cutting operation and while the goods are in the form of a continuous web. In either event the printing operation may be performed rapidly and accurately in an ordinary printing press.

The fabric parts or units next are secured together, edge to edge, to form a cover for a ball or sphere. Preferably the adjacent triangular parts of the northern and southern hemisphere are first sewed together, the seam extending substantially along the equator. That is, the parts 1 and 5, 2 and 6, 3 and 7, 4 and 8 are secured together in this manner. As shown in Fig. 2, two of these parts, as for instance 1 and 5, are laid one upon the other with their outer faces in contact with each other and they are then joined by stitching along the line 9. This operation is then repeated with each succeeding pair of parts or units. Two of the sections so formed are then joined together.

Referring to Fig. 3, it will be observed that the section comprising the parts 2 and 6 which have been joined by the seam 10 are laid upon the section composed of the parts 1 and 5, and these two sections are then united by a seam 12 which extends from one pole substantially to the other. This forms a hemispherical cover section. The other triangular parts 3, 7, 4 and 8 having been united in a similar manner to form a second hemispherical section, as shown in Fig. 4, the two hemispherical sections are then laid one upon the other and stitched together, the parts at this time being wrong side out. By stopping the seams just short of the south pole, an opening is left in the cover at this point, which permits it to be turned right side out, and through which, also, the rubber ball or bladder 15 may be inserted. The filling tube 16 of the bladder 15 preferably is brought through the cover at approximately

the South Pole, since this part of the surface is less important from a geographical standpoint, and the cover may then be sewed up or the edges laced together, any suitable valve
 5 being used, if desired, in the filling tube to facilitate opening the tube for inflation and closing it when this operation has been completed.

In the completed globe the seams are inside
 10 and the device presents a neat, finished, and pleasing appearance. Due to the fact that the covering is made of relatively inelastic material the printing may be performed accurately, and it is a simple matter to match
 15 the lines on the printed pattern in assembling the parts so that the representations of the various parts of the earth's surface will, in the finished globe, be accurate and bear a substantially accurate and proper relationship to each other. In order to facilitate assembling, we prefer to apply in the
 20 printing operation marginal lines 17, Fig. 1, to guide the operator in performing the sewing, cementing, or other operation by means of which the triangular parts are united.

Due to the fact that the triangular parts are made of relatively inelastic sheet material, such, for example, as a strong woven fabric, very little distortion of the covering
 30 occurs in the assembling or inflating operations. Furthermore, in making the covering from a fabric of a definite character, the stretch or elasticity is a relatively fixed quantity and can be predetermined with a fair degree of accuracy. The triangular parts are
 35 cut out of the fabric in such a manner that one set of threads, that is either the warp or weft, run parallel to the altitude of the triangle. In cutting these parts out of a medium weight rubberized duck, we prefer to have the warp threads run parallel to the central meridian of each triangular piece. The weft
 40 of course lies at right angles to the warp so that the triangular parts have practically no stretch either in the direction of the meridians or in the direction of parallels of latitude. They will have, however, a certain amount of diagonal elasticity or stretch. This may be taken into account in making
 50 the plates from which the printing is done, and it is compensated for in cutting out the parts by making the edges slightly flatter or with less curvature than are the edges or sides of a true spherical equilateral triangle.
 55 As above stated, goods can easily be selected in which this stretch is substantially uniform so that it is easily compensated for, and in the completed globe each of the triangular units has the shape of a true spherical triangle. It should be noted, also, that the seams encircling the globe are substantially balanced, one of these seams extending around the equator while the other two form great circles of the globe.

65 A globe of this character can be made

either as elaborate or as simple as desired, and it can be manufactured in a great variety of sizes. The expense of manufacture is very moderate so that it is entirely feasible
 70 for a school, for example, to have a set of such globes, each set being designed for use in teaching one branch of the geography of the earth.

In making large globes it may be necessary to make each of the spherical triangular parts shown in Fig. 1 in two pieces or sections, as indicated at *a* and *b* in Fig. 6, each of these pieces or sections being in itself an isosceles spherical triangle, or approximately of that shape. In such a globe each hemisphere preferably consists of eight spherical triangular sections united in essentially the same manner as the sections shown in Fig. 1 with the base of each section located substantially at the equator, the apex at the pole,
 85 and the lateral edges on great circles. It is preferable, also, in cutting out these sections to have one set of threads of the fabric run in a north and south direction and the other east and west, as above described.

In making even larger globes each of the spherical triangular sections just described could be further divided on parallels of latitude, say for example, at the Arctic Circle and the Tropic of Cancer in the Northern Hemisphere, and on the Antarctic Circle and Tropic of Capricorn for the Southern Hemisphere. Each spherical triangular unit thus would consist of a triangular piece *c*, Fig. 7, at the apex and two other sections *d* and *e*,
 100 each having approximately the shape of a spherical trapezoid, the base and upper edge of each of the latter sections lying approximately on parallels of latitude. By increasing the curvatures of the upper and lower
 105 edges of the latter sections very slightly, if found necessary due to the relative inelasticity of the cloth, the desired degree of bulge or fullness could be given to each spherical triangular unit to make it conform very closely to the spherical shape of the inflated rubber ball 15.

While we have herein shown and described the best embodiment of our invention that we have so far devised, it will be understood that
 115 some departures from the construction and methods shown and described are permissible without departing from the spirit or scope of the invention.

Having thus described our invention, what we desire to claim as new is:

1. An inflatable globe including an outer cover comprising two hemispherical sections united to each other, each section consisting of parts having substantially the shape of
 125 spherical triangles and being made of relatively inelastic sheet material.

2. That improvement in the method of making an inflatable globe cover which consists in cutting a series of substantially equal
 130

parts, each having approximately the shape of a spherical triangle, from a woven fabric with one set of threads of said fabric running substantially parallel to the altitude of each triangle, securing the edges of said triangular parts together to form a cover for a sphere, at some stage in the process printing the fabric, and matching the portions of the printed design to join them properly when securing the fabric parts to each other.

3. An outer cover for an inflatable sphere comprising two hemispherical sections united to each other, each section consisting of a plurality of equal parts, each of said parts having substantially the shape of an equilateral spherical triangle and being made of woven fabric, the threads of said fabric in each part bearing substantially the same relationship to the outline of the parts.

In testimony whereof we have hereunto signed our names to this specification.

GEORGE G. WHEAT.
PAUL N. GARRIGUS.