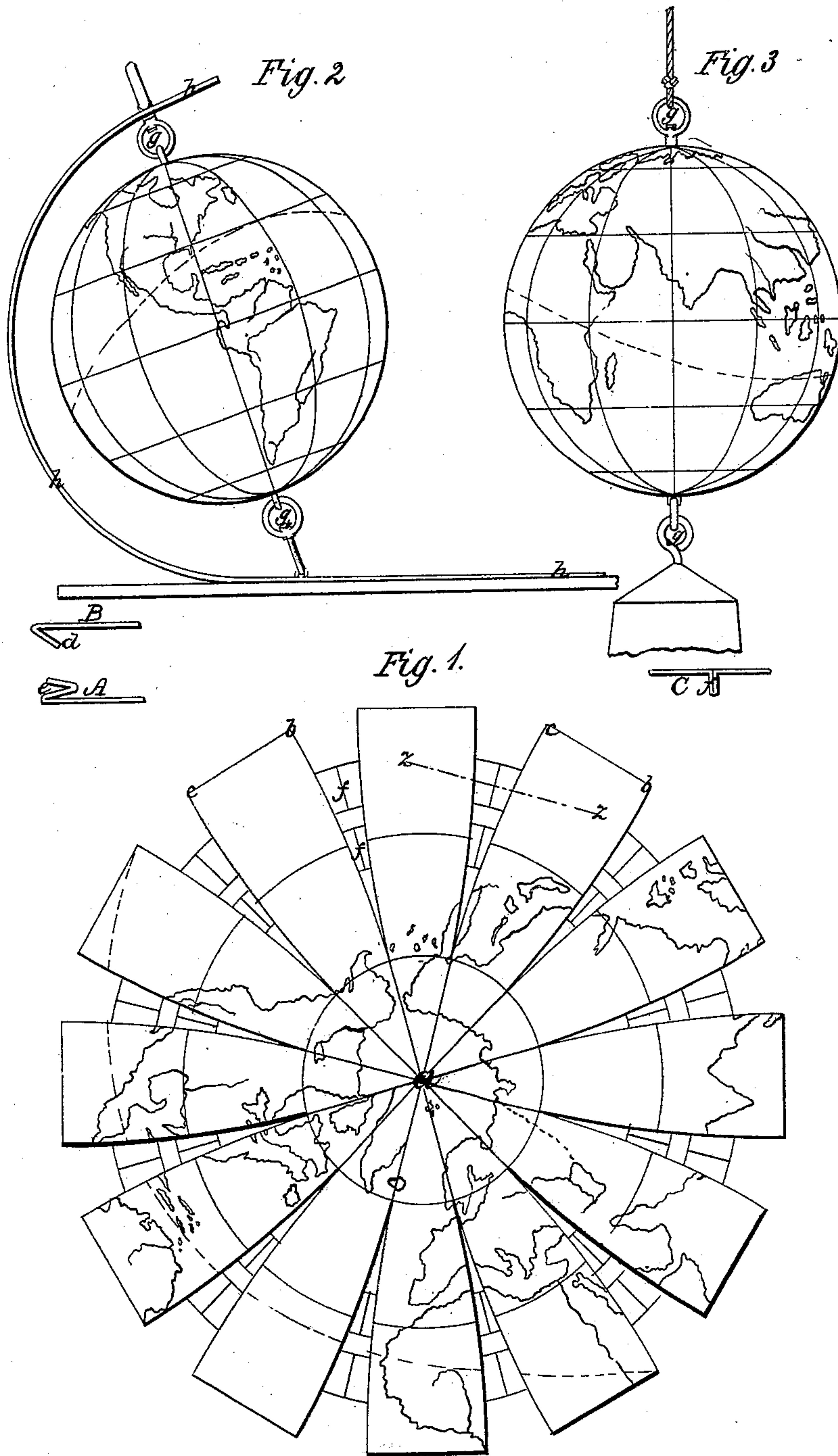


D. Townsend.

Card Globe.

N^o 87,082.

Patented Feb. 16, 1869.



Witnesses
W. B. Crosby
Francis Gould

Inventor:
Dennis Townsend



DENNIS TOWNSEND, OF FIDDLETOWN, CALIFORNIA.

Letters Patent No. 87,082, dated February 16, 1869.

IMPROVEMENT IN FOLDING-CARD GLOBES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, DENNIS TOWNSEND, of Fiddletown, in the county of Amador, and State of California, have invented certain new and useful Improvements in Geographical and Uranographical Globes; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

All of such globes with which I am acquainted have been either solid or hollow spheres, covered with lunes of paper, on which are marked, drawn, or printed; geographical or uranographical representations; the lunes of paper, or other suitable flexible material, being cemented to the unyielding material of the spheres.

Globes so made are bulky for storage and transportation, and are fragile and expensive, for which reasons they are used to but comparatively small extent, and geography and uranography are, therefore, often taught from maps, requiring much effort on the part of teachers and scholars, to impart and to receive correct ideas.

It is universally admitted that geography and uranography should be taught beginners through the medium of globes, making use of maps to obtain a knowledge of details after the students have become well grounded in general principles.

But owing to the bulk and high cost of globes, the majority of schools are unprovided with them; and the prime object of my invention is to produce globes which will answer the practical requirements of school-teachers, at a price which every school-district can afford, and which will also be within the means of most families, and even of each scholar.

In my invention, I make, of one piece of flexible material, such as paper, cloth, leather, parchment, rubber cloth, &c., the covering of a hemisphere, as represented in fig. 1 of the drawings, the sheet being cut, by means of suitable dies or otherwise, into a series of half lunes or quadrantal triangles, united at or near their common apex, which forms one pole of the globe to be made, the bases of the assemblage of the quadrantal triangles being made in the periphery of a circle struck from the pole, or in the periphery of a polygon inscribed in such a circle, the number of sides of the polygon corresponding to the number of half lunes or quadrantal triangles, which, when properly manipulated, make up the superficies of one hemisphere of the globe to be made by the joining of two such hemispheres.

The angles of the quadrantal triangles are marked *a*, *b*, and *c*, *a* being the pole or common apex of all the lunes.

The joining of the two assemblages of quadrantal triangles, is made as follows:

The base of each half lune of one of the assemblages, is bent and creased, as represented at the detail A, and the base of each of the other half lunes in a corresponding assemblage, is bent and creased, as seen at the de-

tail B; and then, by the use of cement, the parts are permanently interlocked, in a perfectly obvious manner, by inserting the part *d* into the space at *e*, and pressing the parts together.

To prevent the displacement of the quadrantal triangles, each, forming one of an assemblage, is united to its adjoining fellows by ligatures, seen at *f*, the ligatures being creased, so that when the poles of the hemispherical coverings are drawn apart, so as to bring into contact the curvilinear boundaries of the half lunes, the ligatures shall bend and fold, as seen at detail C, the fold being made within the globe; the detail C being a section taken on the line *z z* of Figure 1.

At the poles, the material forming the globe may be reinforced with cloth, or other suitable substance, so that any suitable devices may be inserted for the extension of the superficies to form a globe; and for the purpose of turning the globe on its axis, the said devices may be made as swivels, seen at *g*, in Figures 2 and 3.

The entire superficies of each half hemisphere being made of one piece, may be printed from engraved or stereotype-plates or wood-cuts, or by lithography, or otherwise, or the surface may be left blank, for the student to draw upon, or mark out geographical or uranographical representations.

When desirable, especially for large globes, the material which is printed, or which is to be marked upon, may be reinforced by a layer or layers of other suitable material arranged to come within the globe.

A globe, made as described, will not be perfectly spherical, but will be made up of as many flat faces as there are lunes in its composition, unless, indeed, each lune is formed by pressing or otherwise into a suitable convex surface, which may easily be done. But for all practical purposes, the polygonal sphere answers as well as a perfect sphere, and the number of lunes may be as desired.

The parts may be made to assume the globular form, by attaching the north pole to any suitable fixture, and by hanging a weight to the south pole, as seen in fig. 3, or the parts may be elevated from a fixed point, as, for example, the cover of an atlas, and made to assume a globular form by the use of a flat spring, bent as seen in fig. 2, the spring being marked *h* therein, and being bifurcated at each end, so as to straddle the fixtures applied to the poles; the bifurcation of the end of the spring at the south pole being sufficient in amount to allow the adjustment of the globe, to illustrate the inclination of the axis of the earth.

Any atlas, or other large school-book cover, may have provision at about its centre for the attachment of the south pole of the globe, and loops may be provided for securing diagonally on the cover the extending-spring, and elastic strips or tapes may be arranged in connection with the cover, to retain the flattened globe in place.

When desirable, a piece of card-board, separate from,

but arranged to be secured within the covers of an atlas or school-book, may be used for the purposes just described as served by a book-cover.

I claim—

1. A flexible, expansible, and compressible geographical or uranographical globe, when made of a series of quadrantal triangles, substantially as described.

2. Also, a coating or covering for the superficies of a collapsible hemisphere, when figured and made of one piece in quadrantal triangles, joined at or near a common apex, substantially as and for the purpose described.

3. Also, combining the two halves of the superficies of a globe on an equatorial line, by means of a joint be-

tween each pair of quadrantal triangles, substantially as and for the purposes specified.

4. Also, the combination of folding ligatures with the quadrantal triangles, substantially as and for the specified purpose.

5. Also, in combination with the flexible globe, the bow-spring, for expanding it, substantially as described.

6. Also, the combination, by attachment, of a compressible globe with the cover of a book, or with a base confined within such covers.

DENNIS TOWNSEND.

Witnesses:

J. B. CROSBY,
FRANCIS GOULD.