(No Model.)

2 Sheets—Sheet 1.

J. H. FRENCH.

FOLDING SCHOOL GLOBE.

No. 374,789. Patented Dec. 13, 1887.

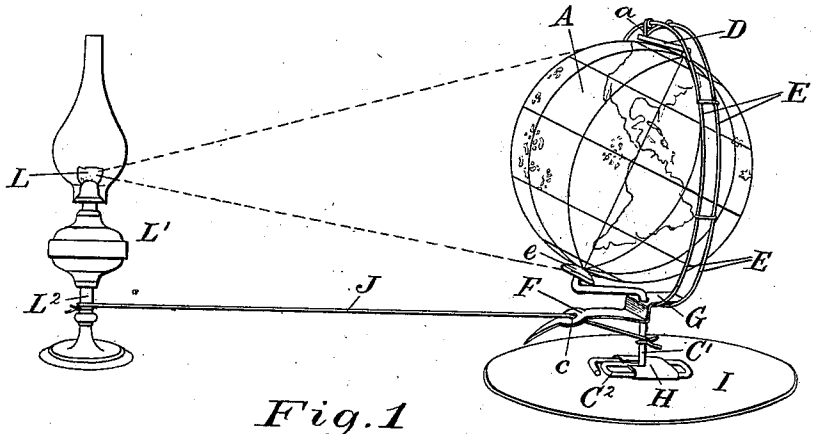


Fig. 1



Fig. 2

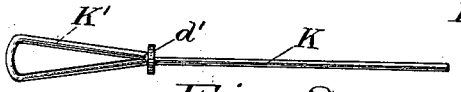


Fig. 3

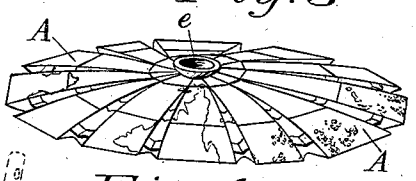


Fig. 4

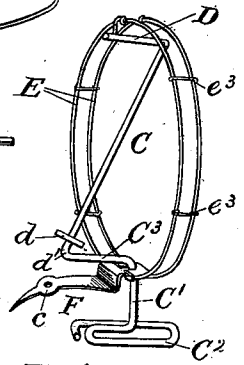


Fig. 5

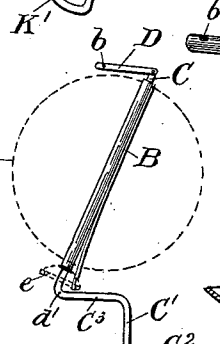


Fig. 8

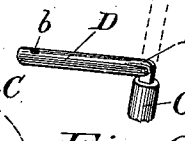


Fig. 6



Fig. 7

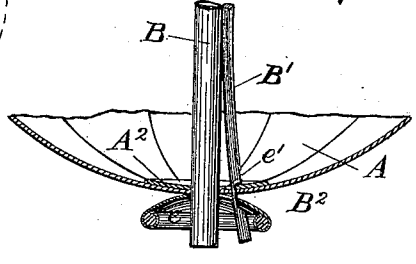


Fig. 9

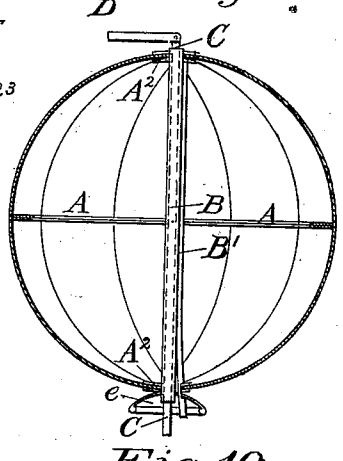


Fig. 10

WITNESSES=

W. W. Lovegrove

Hinsdill Parsons

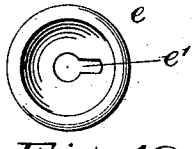


Fig. 18

INVENTOR=

John Homer French

By J. Russell Parsons

Atty

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.)

2 Sheets—Sheet 2.

J. H. FRENCH.

FOLDING SCHOOL GLOBE.

No. 374,789. Patented Dec. 13, 1887.

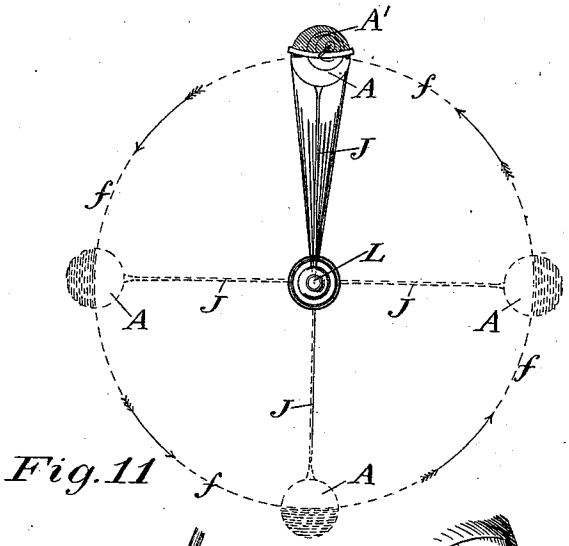


Fig. 11

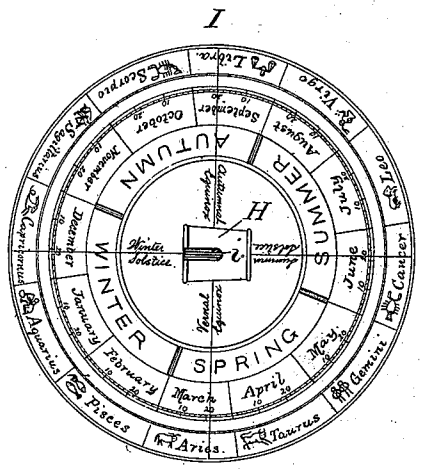


Fig. 12

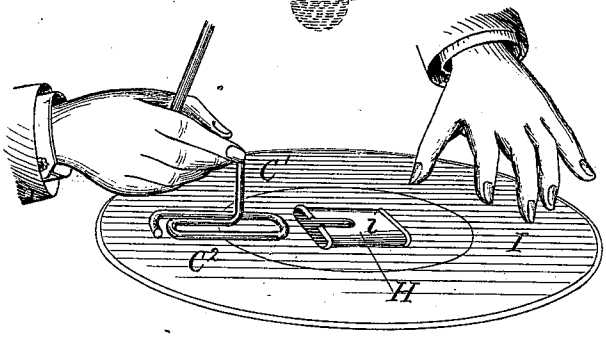


Fig. 13

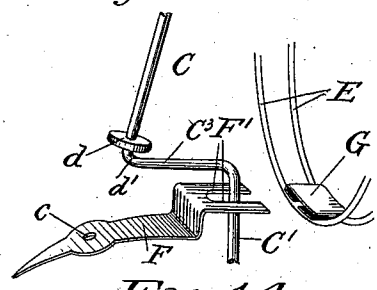


Fig 14

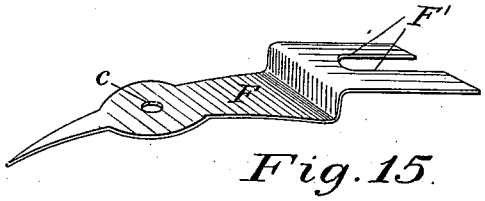


Fig. 15

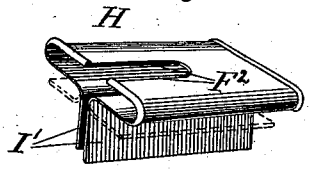


Fig. 16

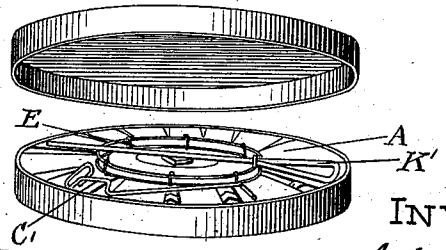


Fig. 17

WITNESSES=

N. N. Lovegrove.

Hinsdill Parsons

INVENTOR=

John Homer French

By J. Russell Parsons

atty

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

JOHN HOMER FRENCH, OF ROCHESTER, NEW YORK.

FOLDING SCHOOL-GLOBE.

SPECIFICATION forming part of Letters Patent No. 374,789, dated December 13, 1887.

Application filed May 18, 1887. Serial No. 238,709. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOMER FRENCH, a citizen of the United States, residing at Rochester, county of Monroe, and State of New York, have invented certain new and useful Improvements in Folding School-Globes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to folding school-globes; and it consists in a novel appliance which not only holds the globe distended, but also forms a bearing for the axis of the globe, in providing an axis which is capable of supporting a twilight-circle, in making the apparatus capable of illustrating the causes of the various changes of day and night, the seasons of the ascendancy of the different constellations of the zodiac, of the varying lengths of day and night, and in so constructing the whole apparatus that it may be cheaply manufactured, and may be conveniently packed away in a small box.

My invention also consists in certain other details of construction and combinations of parts, as more particularly hereinafter specified, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the apparatus embodying my invention, the sun being represented by the lamp L. Fig. 2 is a perspective view of the globe placed upon an axis, with suitable handle, shown in Fig. 3. Fig. 4 shows the globe when folded; Fig. 5, a perspective of the axis, twilight-circle, and index, the globe being detached; Fig. 6, a detail of the axis; Fig. 7, a detail of the twilight-circle. Fig. 8 is an elevation of the axis and the tube for distending the globe; Fig. 9, a detail of the distending-tube and the washers at the south pole; Fig. 10, a vertical section. Fig. 11 shows the manner of illustrating the causes of the various changes of the seasons, &c., being a plan view, and showing four positions of the globe as it is moved around the lamp. Fig. 12 is a plan of the base. Fig. 13 illustrates the manner of attaching the axis to the base, and Fig. 14 of the index to the twilight-circle. Fig. 15 is a perspective of the index. Fig. 16 is a view in perspective of the connecting-piece between the axis and the base. Fig. 17 shows the whole apparatus conveniently packed away in a suitable box. Fig. 18 is a plan of the conical-shaped washer on the exterior of the globe at the south pole.

Similar letters of reference in the various figures designate like parts.

A is the globe, flexibly jointed at the equatorial line, and so constructed that it may assume the positions shown in Figs. 1 and 4. It is made of card-board, preferably, although any other suitable material may be used, and has at its north pole two washers—one inside and one outside—through the holes in which pass an eyelet, which is riveted down upon the washers, thus securing them to the globe. The south pole is likewise provided with two washers, *e* and A^2—one inside and one outside—the hole in each of which is extended into the slot *e'*, and the eyelet which secures them to the globe is correspondingly shaped. The outside washer, *e*, is conical in form, so that it serves as a handle in distending the globe.

B is the tube for distending and holding distended the globe, than the diameter of which it is somewhat longer. The spring-latch B', preferably made of wire, is secured to the tube B, which projects beyond it at the upper end, the tube B passing through the eyelet at the north pole, but the spring B' abutting against the inside washer. The spring B' is notched at its lower end, Figs. 8, 9, and 10. The slot *e'* in the washers A^2 and *e* allows the tube, together with the spring latch B', to be inserted into the globe until the spring-latch B' abuts against the inside washer at the north pole, when, the operator pulling the globe downward by means of the conical-shaped washer *e*, the notch on the spring-latch B' catches on the side of the slot *e'* and holds the globe in position shown in Fig. 1.

It is obvious that the shoulder may be formed on the tube itself and the length of the spring-latch B' much decreased; but I prefer the construction shown in the drawings.

The axis C is of the form shown in Fig. 5, and has pivoted thereto the part D, which may assume either a horizontal or a vertical

position, (shown in dotted lines, Fig. 6,) the pivoted portion being prevented from impinging on the globe by the shoulder on the axis C. At or near the end other than the pivot end of the part D is a hole, *b*, in which fits the pin *a* of the twilight-circle E. The axial part C is inclined to the perpendicular part C′ at an angle of about one hundred and fifty-six degrees thirty-two minutes. The axis is extended into the foot C^2, fitting into the wedge-shaped recess in the piece H, secured to the base I, the lips I′ being passed through the base and bent up against the under side thereof, as shown at Fig. 16 in dotted lines.

The piece H has the slot F^2 provided therein for the passage of the perpendicular part C′ of the axis, which occupies the desired position with reference to the base when pushed into the recess until C′ abuts against the end of the slot F^2. The axis has secured thereto the bearing *d*, upon which the globe rests, the bearing *d* being somewhat above the bend *d′* of the axis, so that there may be no friction between the globe as it revolves on the axis C and the horizontal part C^3 of the axis.

The twilight-circle E is made of two strips of wire or other material, jointed together at the proper distance to designate the extent of twilight by suitable links, e^3, one of which is extended into the pin *a*, diametrically opposite which is the wedge-shaped piece G, in which is detachably secured the index F, the slot F′ in the index first straddling the upright part C′ of the axis, as is clearly illustrated in Fig. 1.

To summarize the manner of putting together the apparatus: The operator inserts the tube B into the globe from the south pole, the tube passing through the eyelet at the north pole, and the spring-latch B′ abutting against the inside washer, and pulls downward upon the globe, grasping the conical-shaped washer *e* until the notch in the spring-latch catches on the side of the slot *e′*, and the globe is held distended. The foot C^2 of the axis is then inserted into the wedge-shaped recessed piece H, secured to base I. The pivoted piece D is then swung upward, so that it forms a continuation of the axis C, and the globe is placed upon the axis, which passes through the tube B, the globe resting on the bearing *d*. The pivoted piece B is then swung downward, and the pin *a* of the twilight-circle E inserted into the hole *b*. The index F (the slot F′ straddling the upright part C′ of the axis) is now inserted into the wedged-shaped recessed piece G.

It is evident from the foregoing description, the various parts of the apparatus being detachably connected, that it may be conveniently packed away for transportation in a small circular box.

The base I is suitably marked, as shown in Fig. 12, with the solstices, the equinoxes, the seasons, months, days of the month, and the various constellations of the zodiac. A lamp, representing the sun, being placed in the center of a table, a string secured to the lamp is passed through the hole *e* in the index to the upright part C′ of the axis, to which it is tied. The string being the radius, the apparatus is moved around the lamp, the axis of the globe always remaining parallel to itself, and the causes during the annual revolution of the earth around the sun, of the changes of seasons, the varying length of day and night, the ascendancy of the different constellations of the zodiac, &c., are thus illustrated, and the times of these changes are indicated upon the base by the index.

The axis K, Fig. 3, with its handle K′, is an axis which can be used independently of the base and its axis and other parts to show the diurnal motion of the earth, the part K passing through the distending-tube B.

I am aware that folding school-globes having means for distending them from the outside have been previously used, and I do not therefore broadly claim a folding school-globe in connection with such mechanism; but

What I do claim, and desire to secure by Letters Patent, is—

1. The combination, with a folding school-globe, of a tube provided with means, as shown and described, for holding the globe distended and adapted to receive and form a bearing for the axis on which the globe is revolved, substantially as and for the purpose described.

2. The combination, with a folding school-globe, of a tube, said tube provided with means for holding the globe distended and forming a bearing for the axis of the globe, and the conical-shaped washer *e*.

3. The combination, with a folding school-globe, of a tube, said tube provided with means for holding the globe distended and forming a bearing for the axis of the globe, and an inclined axis forming a support for the globe.

4. The combination, with a folding school-globe, of a tube, said tube provided with means for holding the globe distended and forming a bearing for the axis of the globe, said axis adapted to support the globe, and a twilight-circle detachably secured to the axis.

5. The combination, in a folding school-globe, of the axis having pivoted extension at the north pole to support a twilight-circle capable of turning upon such extension, and the index straddling the perpendicular part of the axis beneath the globe and detachably secured to the twilight-circle, substantially as and for the purpose described.

6. The combination of the base, the axis detachably secured thereto and provided with pivoted extension at the north pole to support a twilight-circle capable of turning upon such extension, the index straddling the perpendicular part of said axis and detachably secured to the twilight-circle, substantially as and for the purpose described.

7. The combination, in a folding school-globe, of a tube adapted to hold the globe distended and to receive and form a bearing for the supporting-axis detachably secured to the base and supporting a twilight-circle detachably secured to an index straddling the axis, substantially as and for the purpose specified.

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

JOHN HOMER FRENCH.

Witnesses:
C. T. BARNES,
CHARLES D. LARKINS.