E. DE GOUNEVITCH & A. COUAILLET.

CLOCKWORK GLOBE.

APPLICATION FILED JUNE 28, 1909.

970,040.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.

Fig. 2

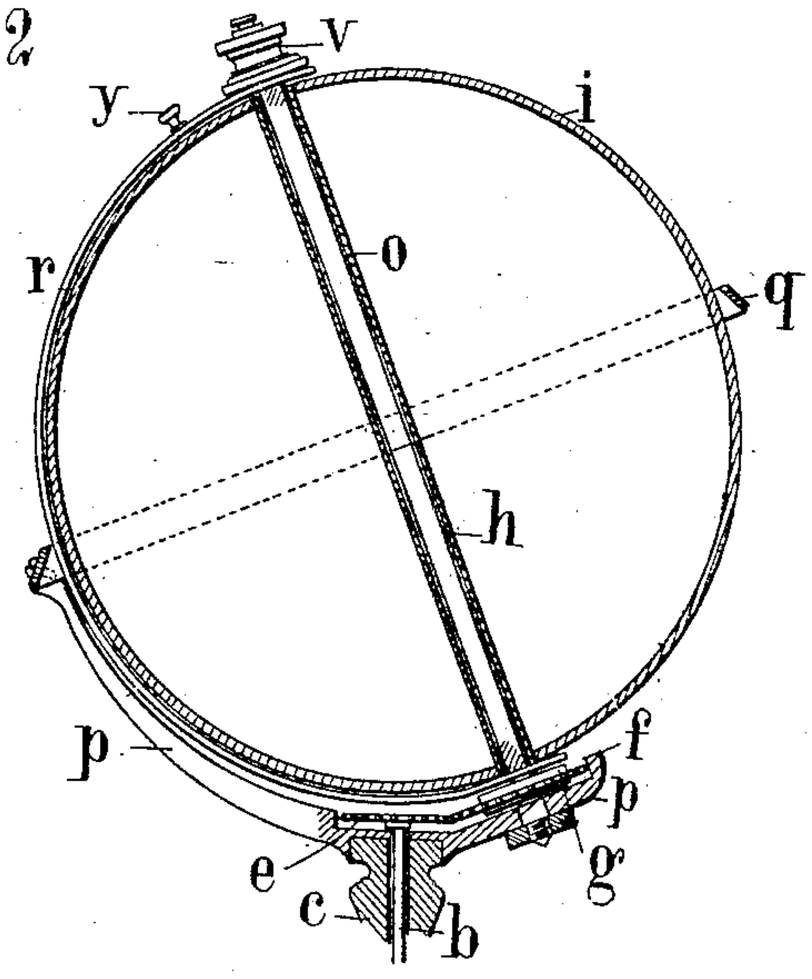

Fig. 1

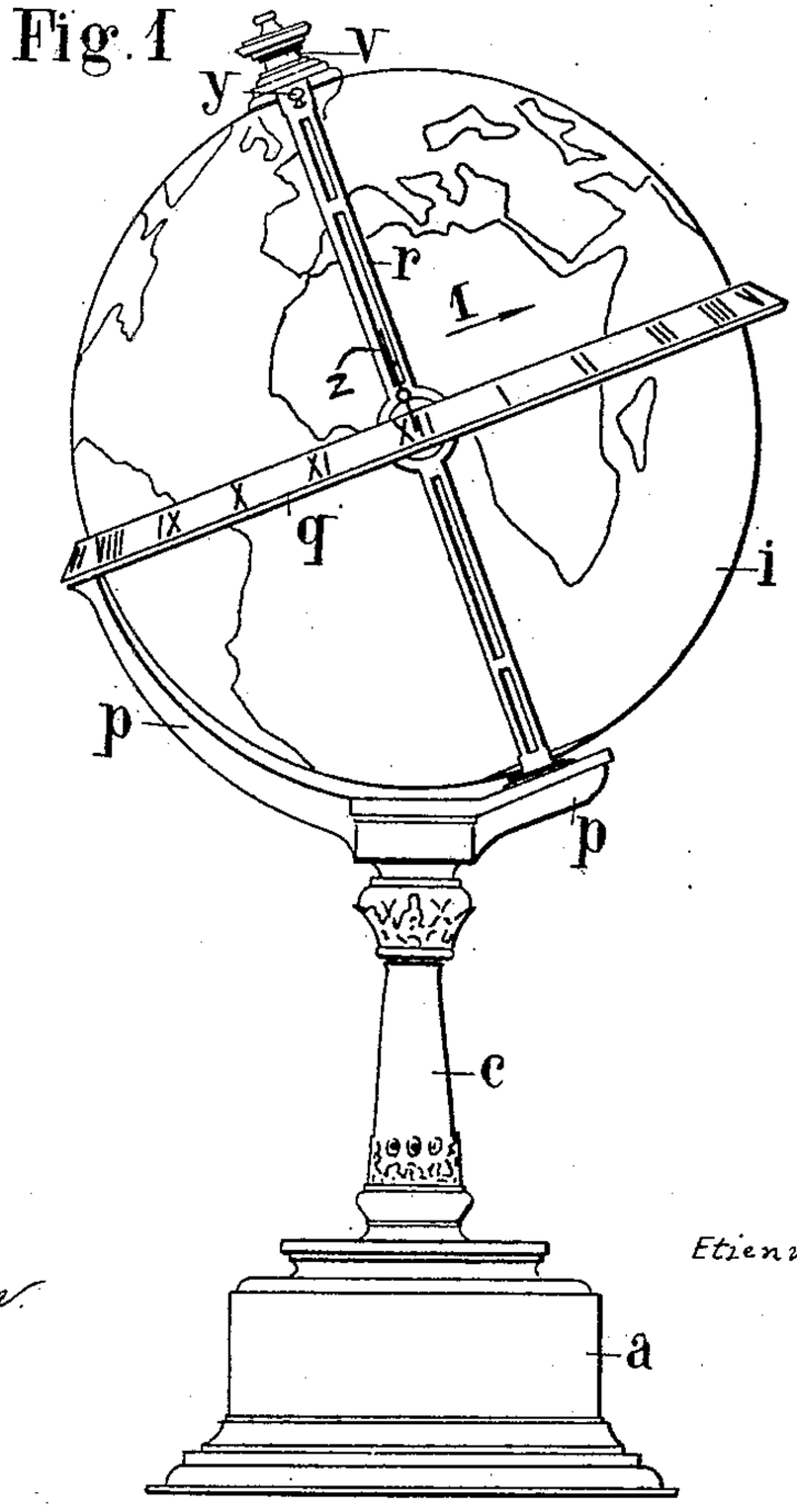

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Fig. 5.

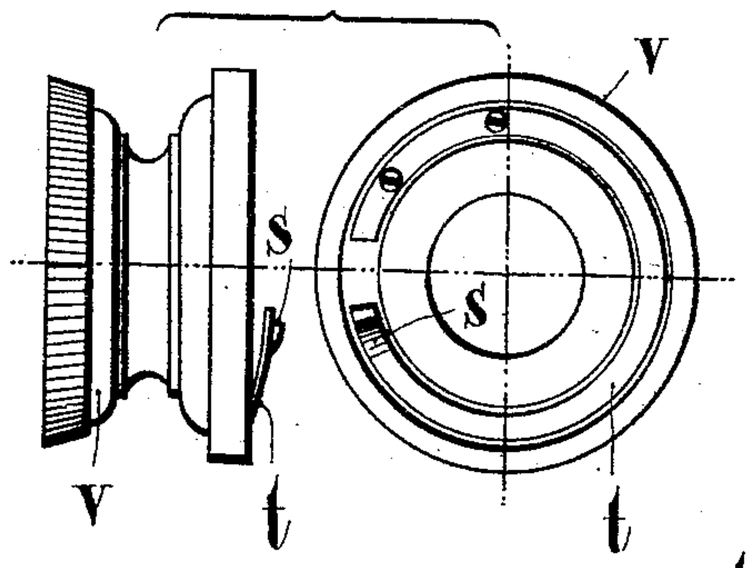


Fig. 4.

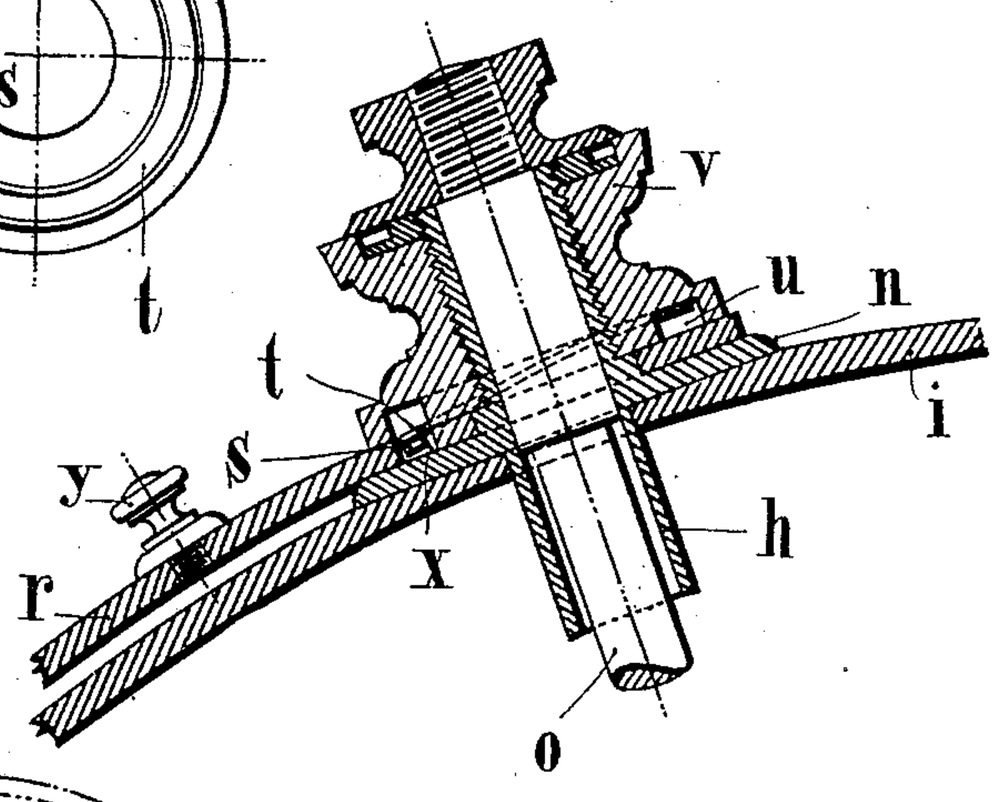


Fig. 6.

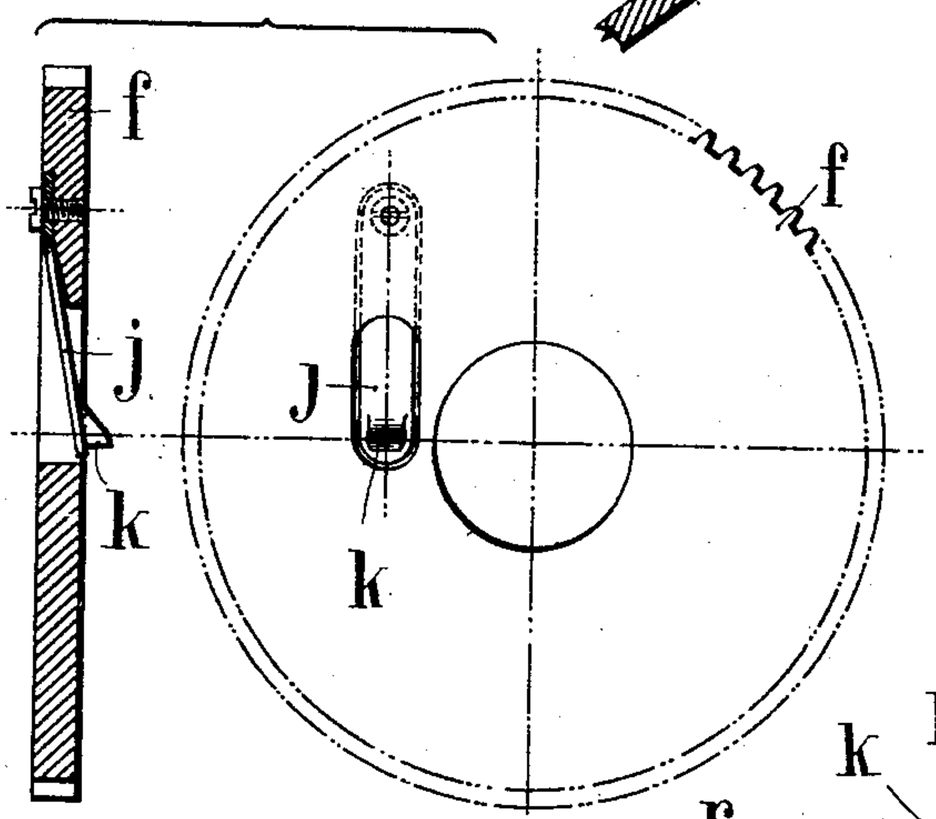
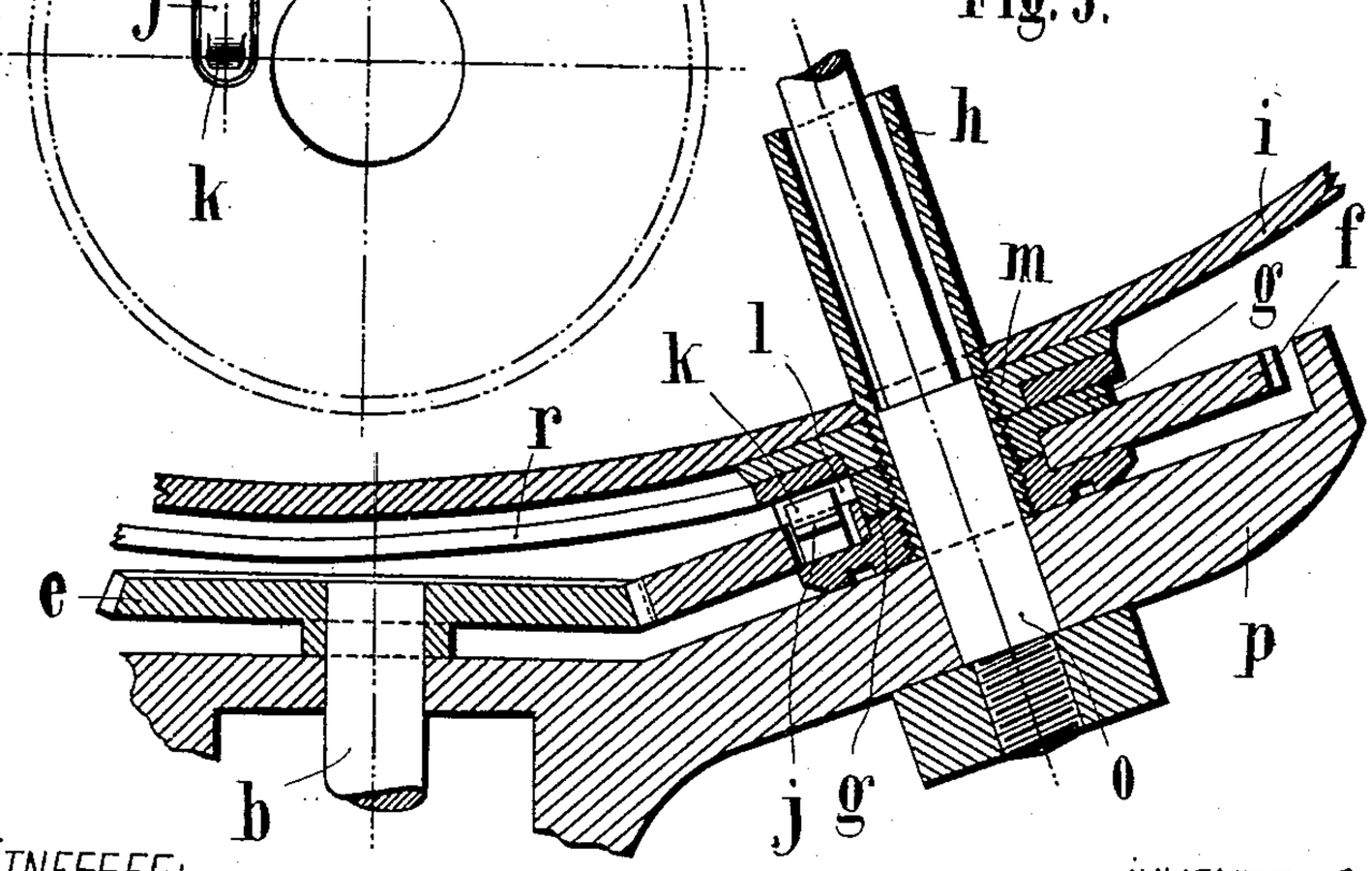


Fig. 3.



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UNITED STATES PATENT OFFICE.

ETIENNE DE GOUNEVITCH, OF PARIS, AND ARMAND COUAILLET, OF ST. NICOLAS D'ALIERMONT, FRANCE.

CLOCKWORK-GLOBE.

970,040. Specification of Letters Patent. **Patented Sept. 13, 1910.**

Application filed June 28, 1909. Serial No. 504,747.

To all whom it may concern:

Be it known that we, ETIENNE DE GOUNEVITCH and ARMAND COUAILLET, the former a subject of the Emperor of Russia, and resident of Paris, France, and the latter a citizen of the Republic of France, and resident of St. Nicolas d'Aliermont, France, have invented new and useful Improvements in Clockwork-Globes, which improvement is fully set forth in the following specification.

This invention relates to a clockwork globe which after having been adjusted for indicating the time on a given meridian like an ordinary clock, enables the corresponding time or any other meridian to be ascertained at any moment, and the relation between the times on any two meridians, for a given time on the meridians which is used as a base.

A clockwork globe according to this invention is illustrated by way of example in the accompanying drawing in which—

Figure 1 is an elevation showing the apparatus as a whole, Fig. 2 is a vertical section along the axis of the globe, and Figs. 3 and 4 are detail views of the mechanism in vertical section on an enlarged scale, Figs. 5 and 6 are detail views showing the automatic clutches hereinafter described.

The base *a* (Fig. 1) contains any desired clockwork, the spindle *b* of the last wheel of which, rising in the column *c*, transmits, by means of a toothed wheel *e* its movement to another toothed wheel *f* arranged around a part *g* screwed to the hollow spindle *h* of the globe *i*. The wheel *f* drives the part *g* and consequently the globe *i* and causes it to participate in the rotation transmitted to it by the wheel *e*, by the engagement with a recess in the part *g*, of a projection *k* secured to a spring blade *j* arranged in a groove in the wheel *f*. The globe *i* is secured to the hollow spindle *h* by means of a part *m* screwed at the south pole to the said spindle, a thickened portion *n* of the same spindle forming the support for the other pole. A solid spindle *o* passing through the hollow spindle of the globe and secured to the part *p* secured to the column *c*, enables the globe and the whole movable system to be rotated. At the end of the long arm of the part *p* is secured by any suitable means a ring *q* parallel to the equator traced on the globe and divided into 24 hours (12 hours for the day and 12 for the night).

In addition to the above, a part *r* fitting the curvature of the globe and arranged between the latter and the equator *q*, is mounted with its ends on the bearing portions of the parts *m* and *n*. In certain circumstances, the part in question can be rotated about the globe independently of the latter, but nevertheless a device similar to that used for coupling the globe to the clockwork, enables the said part to be shifted simultaneously with the globe.

The device in question comprises a projection *s* secured to a spring *t* arranged in a groove *u* in a knob *v* screwed on the hollow spindle *h*, the said projection engaging with a notch *x* in the part *r*. The part *r* is provided with a handle *y* enabling it to be manipulated so as to bring it to coincide with any of the meridians of the globe *i*, and a needle or hand *z* arranged so as to move on the divisions of the equator *q*. The device is set for a given meridian, for instance, for the Paris meridian by coupling, by means of the spring projection *h*, the globe and the part *r* when the latter coincides exactly with the Paris meridian. In these conditions, the globe being coupled to the clockwork by the spring projection *k*, it will be understood that the hand *z* indicates on the dial of a separate system formed by the equator *q*, all the successive hours in accordance with the Paris meridian, in the same way as would be done by an ordinary clock. Nevertheless, the clockwork globe forming the subject of this invention has other advantages. It enables one to find out what time it is at that moment on meridians other than that selected as the basis for adjusting the apparatus. To that end, keeping the globe coupled to the clockwork, the part *r* is shifted in the direction of the arrow 1 (Fig. 1) by means of the knob *y*, so as to bring it exactly on the desired meridian. The hour indicated on the equator *q* by the hand *z* is that desired. Having done this, it is sufficient to bring back the part *r* in order that the engagement interrupted for a moment of the said part and of the globe, should take place again by means of the spring projection *s*, engaging with the notch *x*. The engagement takes place at the exact hour, whatever be the time the disengagement lasted. The clockwork globe makes it also possible to ascertain what time it is at a given meridian at the moment when it is a

given hour taken as a basis of comparison, on any meridian. In order to obtain that result, the part *r* is shifted as before. The hand *z* is brought to the desired hour selected as the basis of comparison, then the globe is disengaged from the clockwork knob and rotated by means of the milled button *v* in the direction of the arrow 1 (Fig. 1), and the meridian, the hour of which is known, is made to coincide with the part *r*. This first portion of the operation having been performed, the part *r* is brought, for greater accuracy of definition, to the meridian of the place, the time at which it is desired to know. The time in question is then that indicated by hand *z* on the equator *q*.

It goes without saying that the clutch devices hereinbefore described have their projections out in such manner that the disengagement should take place only when the part *r*, or the globe itself, is moved in the direction of the arrow 1 (Fig. 1). On the contrary, if for some reason it has been forgotten, in moving the globe in the direction opposite to the arrow 1 (Fig. 1), to couple it again to the clockwork the said engagement takes place automatically at the moment when the wheel *f*, still driven by the clockwork, brings the projection *k* under the notch *l* of the part *g*. The coupling takes place in these conditions at the exact hour to the moment, which avoids the necessity of again regulating the apparatus.

We claim—

1. In a device of the character described, the combination with a globe, of means for rotatably supporting the same at the poles, a uniformly driven actuating member for said globe and an automatic clutch device between said actuating member and globe, whereby said globe may be moved independently of said actuating member in one direction only, said clutch device serving, when the movement is reversed, to lock said parts in their original relative positions.

2. In a device of the class described, the combination with a globe, of means for rotatably supporting the same at the poles, a continuously driven actuating member for said globe, a semi-circular strip extending from one pole to the other adjacent the surface of the globe, an automatic clutch between the globe and its actuating member, and a second automatic clutch between the said semi-circular strip and the globe, whereby the several parts normally move together, but whereby the globe may be moved independently of the actuating member and the said strip independently of the globe.

3. In a device of the class described, the combination with a globe, of an inclined shaft on which said globe is journaled, an actuating member for said globe, means for driving said actuating member at uniform speed, and a clutch between the globe and actuating member permitting the globe to be moved independently of such member in one direction but serving, when the globe is returned, to lock it in its original position relative to the actuating member.

4. In a device of the class described, the combination with a globe, of an inclined shaft on which said globe is journaled, a uniformly driven actuating member at one end of such shaft, a semi-circular strip arranged adjacent the surface of the globe and having its ends loosely journaled on said shaft, and an automatic clutch device between the actuating member and the globe and also between the globe and semi-circular strip, the arrangement being such that all of said parts normally move together, but that the globe may be moved in one direction independently of the actuating member and the strip moved in the same direction independently of the globe, substantially as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

ETIENNE DE GOUNEVITCH.
A. COUAILLET.

Witnesses:
EMILE LEOBRET,
H. C. COXE.