Jan. 23, 1940. G. B. GALLUP 2,188,041

ASTRONOMICAL DEVICE

Filed May 13, 1939 2 Sheets-Sheet 1

Fig. 1.

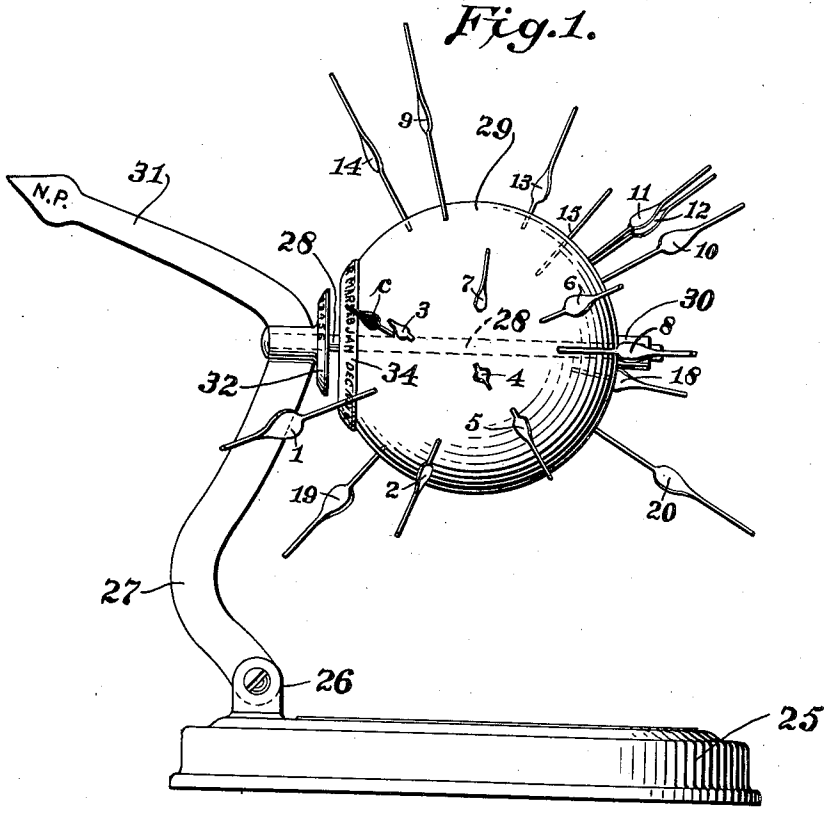

Fig. 2.

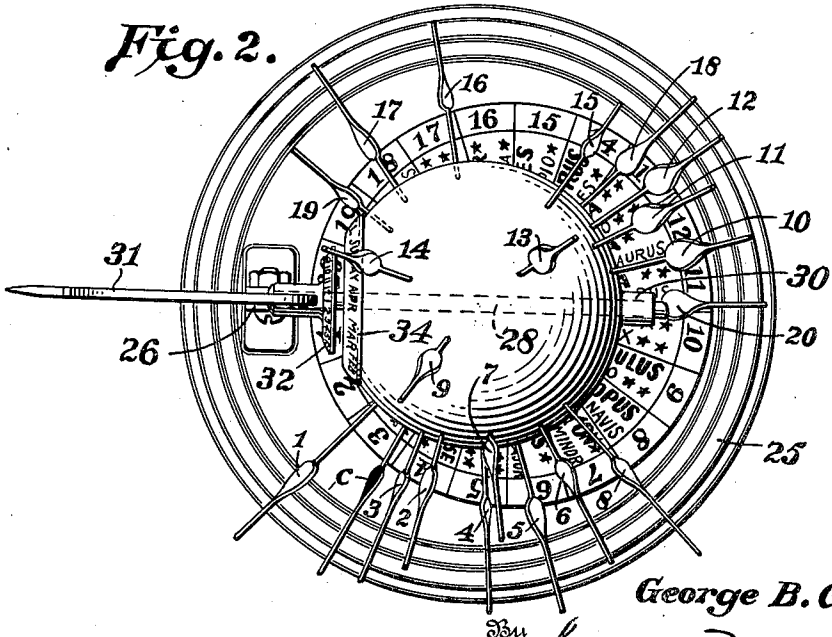

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Fig. 3.

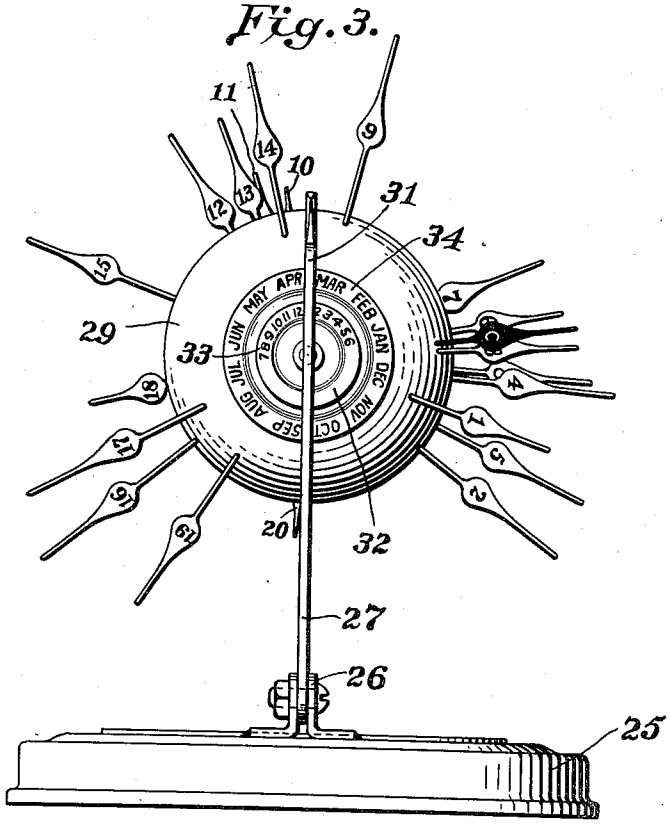
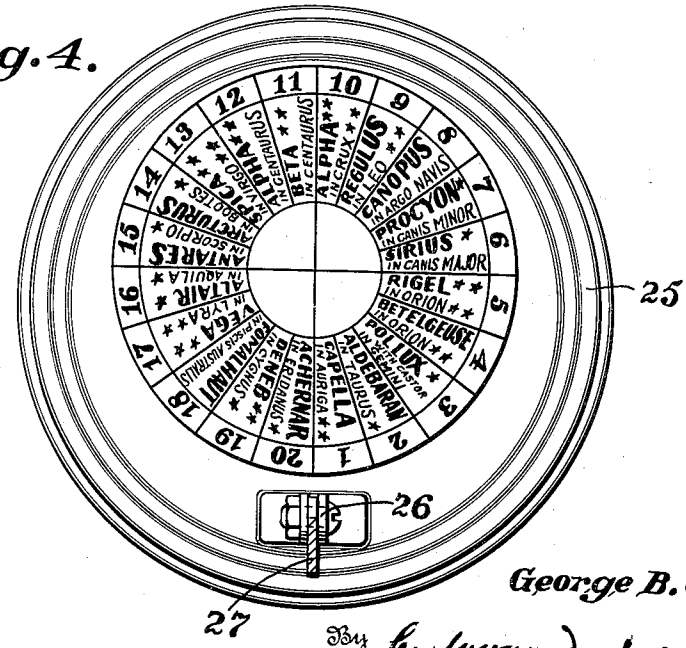


Fig. 4.



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UNITED STATES PATENT OFFICE

2,188,041

ASTRONOMICAL DEVICE

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Application May 13, 1939, Serial No. 273,531

6 Claims. (Cl. 35—47)

This invention relates to astronomical devices and has as its purpose to provide a device which will readily enable celestial bodies to be located, even by the unskilled. By way of illustration I have shown in the accompanying drawings a device, in accordance with the invention, designed to locate stars of first magnitude visible in the northern hemisphere and I shall proceed with the description of the invention with reference to these drawings.

In the drawings:

Figure 1 is an elevation of the new appliance.

Figure 2 is a plan view of the same.

Figure 3 is an elevation of the same as seen from the left of Figure 1, and

Figure 4 is a plan view of the supporting base of the device with superjacent structure removed.

Referring to the drawings, reference numeral 25 designates a circular base and reference numeral 26 a bracket secured to the base adjacent an edge thereof. An upright 27 is pivotally secured to bracket 26 by means of a bolt and nut and through manipulation of the latter the upright may be adjusted relative to the vertical.

The upright fixedly carries a pin or shaft 28 which extends substantially diametrically across the base and rotatively supports a body 29 here shown as of spherical shape. Body 29 is retained on pin 28 by means of a fixed collar 30 and is rotatable relative to the pin, there being preferably sufficient friction between the two so that the body 29 will retain any position of adjustment relative to the pin. As shown in Figure 1, pin 28 occupies a substantially horizontal disposition.

Above pin 28 upright 27 is extended to provide an upwardly and outwardly inclined pointer arm 31 which is in the vertical plane of pin 28.

Between the upright 27 and body 29, a plate 32, here shown as being in the form of a circular disc, is fixedly mounted on pin 28 coaxially therewith and has equally spaced hour markings 33 arcuately arranged on its upper portion, these markings designating the hours from seven in the evening until six in the morning. A circular disc 34 fixed on body 29 and forming a part thereof is coaxial with pin 28 and has twelve equally spaced markings which designate the twelve months of the year. If desired, the spaces designated by these latter markings may be subdivided into periods which may be daily, if there is sufficient room, or the sub-divisions may, for example, represent ten day periods.

Engaged in body 29 are a group of pointers shown as numbered from 1 to 20 and these are so inserted, as determined by right ascension and plus and minus declension, that, with body 29 properly disposed, each will point in the direction of a star of first magnitude. The names of these stars are desirably printed on the top of base 25 as particularly shown in Figure 4 and are identified by numbers corresponding with those of the pointers. The pointers, as shown, have expanded portions adapted to receive the numbers. However, if these expanded portions are sufficiently large they may directly receive the names of the stars, thus rendering unnecessary the indicia on the base 25. Preferably the pointers 1 to 20 are of different lengths, as shown, thus indicating the relative magnitudes of the stars to which they are intended to point.

The device, as set up in Figure 1, is intended for use at an intermediate latitude of the northern hemisphere and pin 28 is substantially horizontal when in the use of the device pointer 31 is directed toward the star Polaris. At positions farther north the pointer will be inclined upwardly somewhat more, this being accomplished by adjusting the upright 27 relative to the bracket 26. In positions farther south the pointer will be correspondingly lowered. The horizontally extending relation of pin 28 is thus correspondingly altered and body 29 correspondingly tilted. In the drawings it is assumed that an observation is being made at one A. M. on April first, and it will be seen from Figure 3 that body 29 has been adjusted about its axis to bring the first part of the April marking directly above the one o'clock hour marking. By the use of a flash light and following the direction of the various pointers which point above the horizon, those stars above the horizon may be readily identified. For example, viewing along the pointer 9 the star Regulus will be observed and the name of the star is determined by referring the numeral 9 to the indicia on the base, the numeral 9 identifying Regulus in the constellation Leo. Similarly, all the other stars of first magnitude above the horizon may be identified. If the observation continues until two A. M. body 29 will be rotated in a westerly direction (clockwise, Figure 3) to bring the April marking above the hour marking 2. If the observation is being made on April 15th, the middle of the April marking will be aligned with the proper hour marking.

The stars in question are so widely spaced that they can be identified from the pointers 1 to 20 with little difficulty. Perhaps the only exception occurs in the case of Castor and Pollux and

to overcome any difficulty in this respect, I provide a pointer C, this pointer indicating the position of Castor, while pointer number 3 indicates the position of Pollux.

Thus, merely by disposing the body 29 with reference to a particular celestial body, here taken as Polaris, and this disposition being determined by the pointer 31, it is only necessary to adjust the body 29 about its axis to the time the observation is being made, to enable all those stars of first magnitude above the horizon to be identified. It will be understood that for use in the southern hemisphere the body 29 and its pointers could be rearranged with reference to the southern pole star, Sigma Octantis.

The device can be relatively cheaply produced in quantity by the use of suitably designed jigs for determining the arrangement of the holes in body 29 which receive the various pointers. In use I have found the device to be of great educational value.

Variations in details of form and arrangement of parts may, of course, be made without departure from the invention as defined in the following claims.

I claim:

1. A device of the class described comprising a body mounted for rotation on a generally horizontally extending orientable axis, month and hour indicating means in accordance with which said body is adjustable about its axis, and pointers carried by said body arranged at proper angles to indicate respectively the relative positions of predetermined celestial bodies when said axis is in a certain disposition with reference to a certain other celestial body and said rotatable body is adjusted about said axis to accord with the month and hour.

2. A device of the class described comprising a body mounted for rotation on a generally horizontally extending orientable and tiltable axis, month and hour indicating means in accordance with which said body is adjustable about its axis, and pointers carried by said body arranged at proper angles to indicate respectively the relative positions of predetermined celestial bodies when said axis is in a certain disposition with reference to a certain other celestial body and said rotatable body is adjusted about said axis to accord with the month and hour.

3. A device of the class described comprising a body mounted for rotation on a generally horizontally extending orientable axis, an upwardly inclined pointer in fixed relation to said axis, month and hour indicating means in accordance with which said body is adjustable about its axis, and pointers carried by said body arranged at proper angles to indicate respectively the relative positions of predetermined celestial bodies when said pointer is directed at a certain other celestial body and said rotatable body is adjusted about its axis to accord with the month and hour.

4. A device of the class described comprising a body mounted for rotation on a generally horizontally extending orientable axis, markers on said body equally spaced about said axis concentrically therewith designating the months of the year, a plate fixed with respect to said body adjacent said markers and provided with markers designating in arcuate arrangement the hours of the night, and pointers carried by said body arranged at proper angles to indicate respectively the relative positions of predetermined celestial bodies when said axis is in a certain disposition with reference to a certain other celestial body and said rotatable body is adjusted about said axis to properly relate the month and hour markers.

5. A device of the class described comprising a body mounted for rotation on a generally horizontally extending orientable and tiltable axis, markers on said body equally spaced about said axis concentrically therewith designating the months of the year, a plate fixed with respect to said body adjacent said markers and provided with markers designating in arcuate arrangement the hours of the night, and pointers carried by said body arranged at proper angles to indicate respectively the relative positions of predetermined celestial bodies when said axis is in a certain disposition with reference to a certain other celestial body and said rotatable body is adjusted about said axis to properly relate the month and hour markers.

6. A device of the class described comprising a body mounted for rotation on a generally horizontally extending orientable axis, markers on said body equally spaced about said axis concentrically therewith designating the month of the year, a plate fixed with respect to said body adjacent said markers and provided with markers designating in arcuate arrangement the hours of the night, an upwardly inclined pointer in fixed relation to said axis, and pointers carried by said body arranged at proper angles to indicate respectively the relative positions of predetermined celestial bodies when said pointer is directed at a certain other celestial body and said rotatable body is adjusted about its axis to properly relate the month and hour markers.

GEORGE BREWSTER GALLUP.