

Feb. 16, 1926.

W. F. HOLEKA

1,573,343

SUPPORT

Filed Dec. 31, 1923

2 Sheets-Sheet 1

Fig. 1.

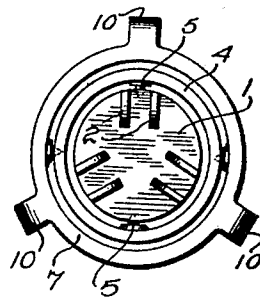
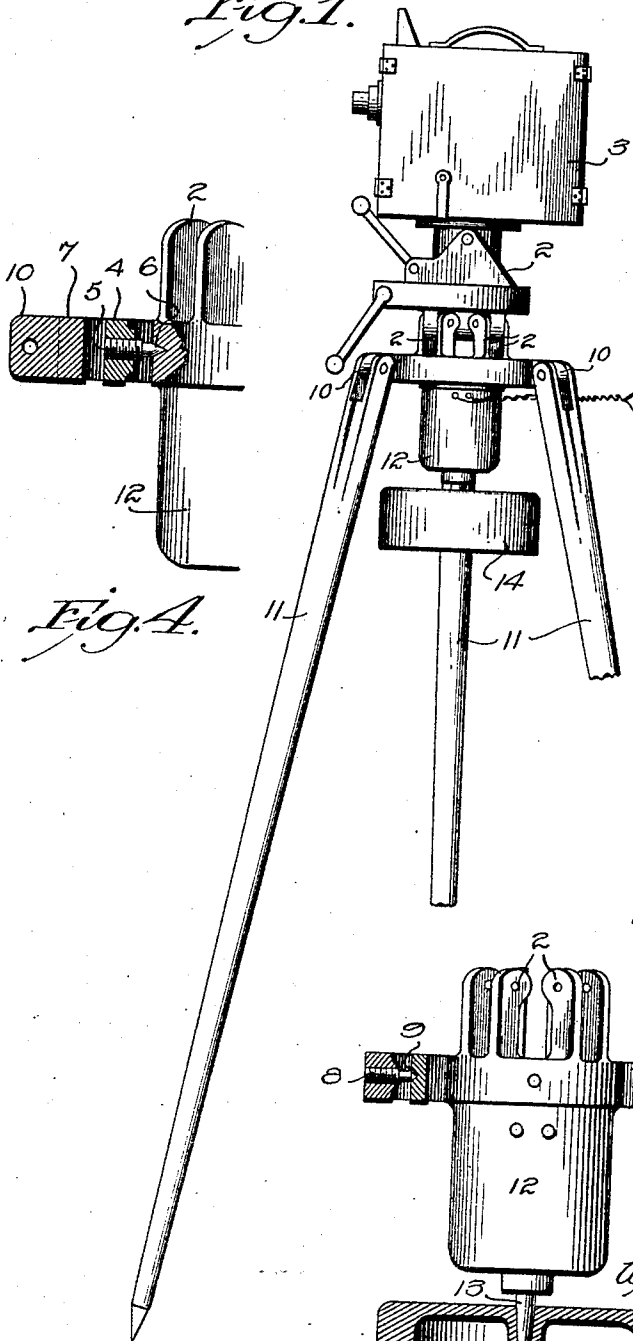
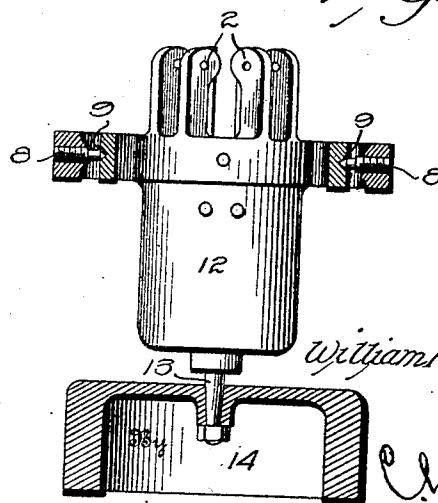


Fig. 2.

Fig. 4.

Fig. 3.



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Fig. 5.

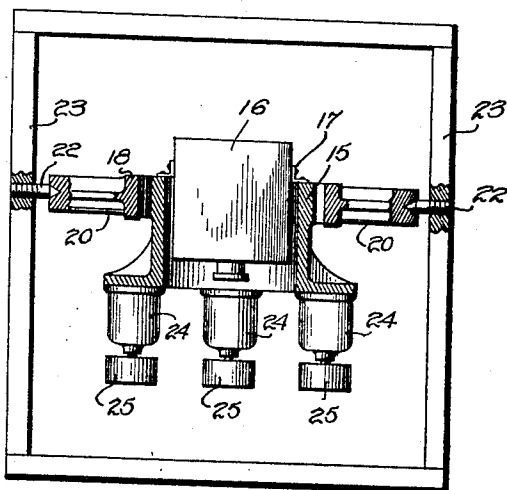


Fig. 6.

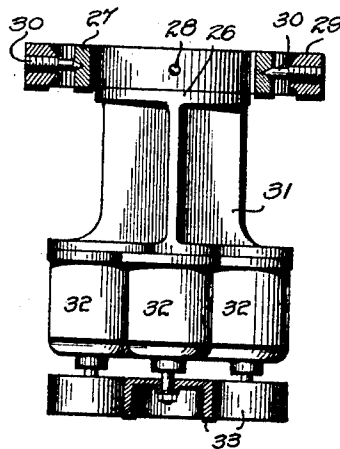


Fig. 7.

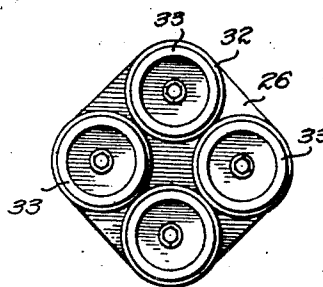
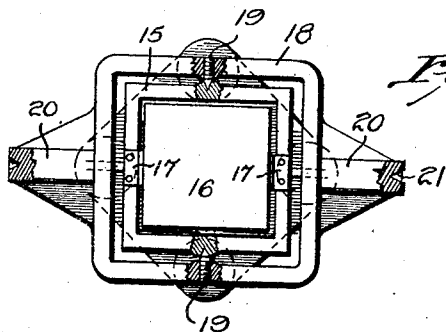
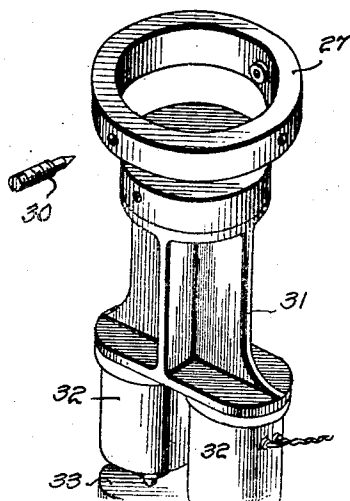


Fig. 9.

Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM F. HOLEKA, OF SAN FRANCISCO, CALIFORNIA.

SUPPORT.

Application filed December 31, 1923. Serial No. 683,812.

To all whom it may concern:

Be it known that I, WILLIAM F. HOLEKA, a citizen of the Republic of Czechoslovakia, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Supports, of which the following is a specification.

This invention relates to supports, and more particularly to supports whereby an instrument, such as a moving picture camera, sextant, range finder, gun or the like may be retained in a horizontal position.

This application is, in part, a continuation of my copending application for supports, filed March 17, 1923, Serial No. 625,900.

The support is adapted for use in connection with any type of instrument wherein it is necessary to maintain a true horizon regardless of the movement of the vehicle or other member on which the instrument is mounted.

In the present application, I have illustrated several forms of the invention serving as supports for moving picture cameras. In taking pictures from a boat, motor vehicle, or other movable support, a false effect is produced due to the movement of the vehicle or support. In the completed picture, the support appears to retain a horizontal position and the element photographed appears to move.

In the present invention, I provide a support in the form of a platform free to swing in two planes, and means for retaining it in horizontal position regardless of the movement of the vehicle, boat, or other moving device on which the support is arranged.

More specifically, I provide a motor secured directly to the support and a gyroscope driven by the motor and adapted to retain the motor shaft in a vertical position, whereby the support is retained in a horizontal position.

In the accompanying drawings, I have shown several embodiments of the invention. In this showing:

Figure 1 is a side elevation of a tripod showing the invention applied,

Figure 2 is a plan view of the tripod with the camera removed,

Figure 3 is a vertical sectional view of a portion of the apparatus shown in Figures 1 and 2,

Figure 4 is a similar view taken at right angles to Figure 3,

Figure 5 is a side elevation, partly in section, showing another embodiment of the invention, as a support for an aeroplane mapping camera,

Figure 6 is a similar view of another form of the invention,

Figure 7 is a plan view of the structure shown in Figure 5 of the drawings,

Figure 8 is a perspective view of another embodiment of the invention, and,

Figure 9 is a bottom plan view of the apparatus shown in Figure 6 of the drawings.

Referring to Figures 1 to 4 of the drawings, the reference numeral 1 designates a table or support of any type. This table is provided with lugs 2 adapted to support a camera or other instrument. In the drawings, I have shown a camera 3 mounted in the lugs in any suitable manner. As the camera is of the usual construction, a further description of the same is deemed unnecessary. An intermediate ring 4 is arranged around the table and this ring carries a pair of oppositely disposed screws 5. These screws are provided with pointed ends 6, adapted to be received in openings in the support. An outer ring 7 is arranged exteriorly of the intermediate ring and this outer ring is in turn provided with screws 8 arranged diametrically opposite each other and intermediate the screws 5. The screws 8 are provided with pointed ends 9, adapted to be received in openings in the ring 4 to pivotally support it. The outer ring may be supported in any suitable manner. In the drawings, I have shown the ring provided with lugs 10 adapted to receive the legs 11 of a tripod.

A motor 12 is arranged beneath the table and this motor is provided with a vertically disposed shaft 13. A gyroscope wheel 14 is arranged on this shaft.

Referring to Figures 5 and 7 of the drawings, the reference numeral 15 designates a support for the camera. A camera 16 is mounted in the support by means of lugs 17. The support, as shown, is rectangular in horizontal cross section and is arranged within a rectangular ring or frame 18. Screws 19 are arranged in the frame diametrically opposite each other and these screws are provided with pointed ends adapted to be received in openings in the supporting member 15. Arranged at right

angles to a line adjoining the line connecting the screws 19, the frame 18 is provided with extensions 20. Each of these extensions are provided with cone shaped openings 21 adapted to receive the ends of screws 22. These screws are arranged in suitable supporting members 23, forming a part of the frame of the aeroplane. In this form of the invention, I have shown a plurality of motors 24 arranged on the frame 18 and the shaft of each motor is provided with a gyroscope wheel 25.

In the form of the invention shown in Figures 6 to 9 of the drawings, I have shown an apparatus substantially similar to that shown in Figures 5 and 7 of the drawings. This device comprises a table or support 26 surrounded by a ring 27 which is connected to the table by means of two oppositely disposed screws 28. The ring 27 is mounted in an outer ring 29 pivotally supporting the inner ring by means of two oppositely disposed screws 30. The table is provided with an extension 31 and a plurality of motors 32 are arranged on the extension. Each of the motors is provided with a gyroscope wheel 33.

The apparatus shown in Figure 8 of the drawings is substantially similar but is provided with two motors in place of the four motors shown in Figures 6 and 9 of the drawings. In this form of the invention, the motors are likewise provided with gyroscope wheels 33.

The operation of the apparatus shown in Figures 1 to 4 of the drawings will be apparent from the foregoing description. When the camera is used on a vehicle, in a boat, or on any other unsteady support, the motor 12 is operated to drive the gyroscope wheel 14. This retains the shaft 13 in a vertical position and the table 1 in a horizontal position. The tripod support is permitted to swing laterally of the camera without moving the table through the provision of the screws 5. In such case, the two rings assume a position at an angle to the plane of the table and the table pivots on the screws 5. If the boat, vehicle, or other support tips longitudinally, the intermediate ring 4 and the table remain in the horizontal position and the outer ring assumes an angular position, the intermediate ring 4 swinging around the screws 8, as pivots.

In the apparatus shown in Figures 5 and 7 of the drawings, in making photographic maps from aeroplanes, an automatic or cable release camera is generally employed, operated by the pilot or observer in the plane. The camera takes a picture at regular inter-

vals, about 20 seconds apart. These pictures must "overlap" about 50 per cent or more, because it is practically impossible to maintain an aeroplane absolutely level. A displacement from the horizontal of a few degrees may cause photographing of a certain part twice, thus leaving a gap. Furthermore, pictures taken when the camera is not properly arranged show a certain distortion which is objectionable. By means of the construction shown in Figures 5 and 7 of the drawings, a camera may be supported with the lens in a horizontal position regardless of the angle of the plane, the support 15 pivoting on the pins 19 and the frame 18 pivoting on the pins 22.

The forms of the invention shown in the other views operate in the same general manner and illustrate different methods of employing a plurality of gyroscope wheels instead of the one gyroscope wheel shown in Figures 1 to 4 of the drawings.

It is to be understood that the forms of my invention herewith shown and described are to be taken as preferred examples of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. In a device of the character described a central support having a depending portion provided at its bottom with an outstanding horizontal flange, a plurality of motor casings secured to said flange, a depending motor shaft carried by each motor casing, a fly-wheel carried by each shaft adjacent its motor casing, means adjacent the upper face of said support for securing an instrument thereto, an inner member surrounding said support and pivotally connected at opposite sides thereto, and an outer member surrounding said inner member and pivotally connected thereto at opposite sides and at right angles to said first named pivotal connection, the upper faces of said support and said inner and outer members being substantially flush.

2. A device constructed in accordance with claim 1 wherein said support is provided throughout its length with an axial opening to receive an instrument secured to said support, said flange being substantially square, said motor casings being circularly arranged and secured to said flange adjacent its corners.

In testimony whereof, I affix my signature.

WILLIAM F. HOLEKA,