

May 10, 1949.

W. HECKMAN

2,469,387

CONVERSION UNIT FOR FIRE FINDERS

Filed Dec. 4, 1946

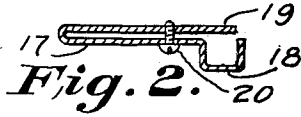


Fig. 2.

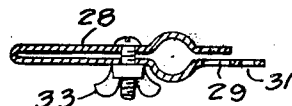


Fig. 4.

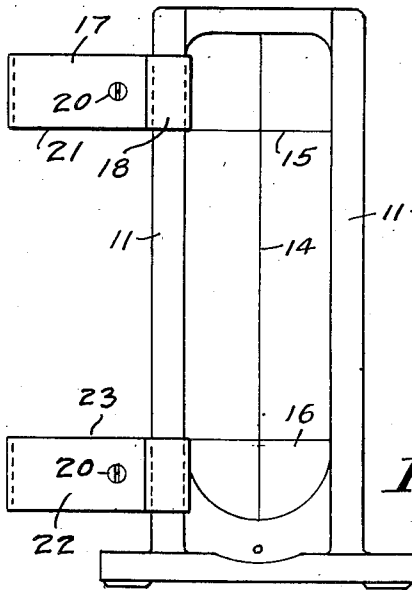


Fig. 1.

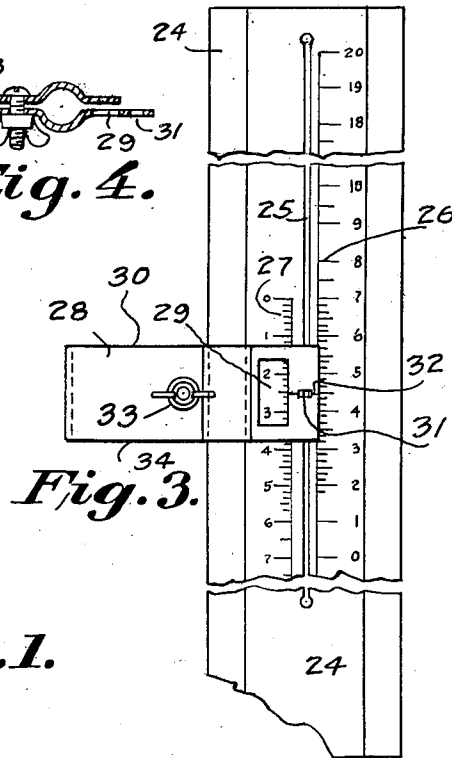


Fig. 3.

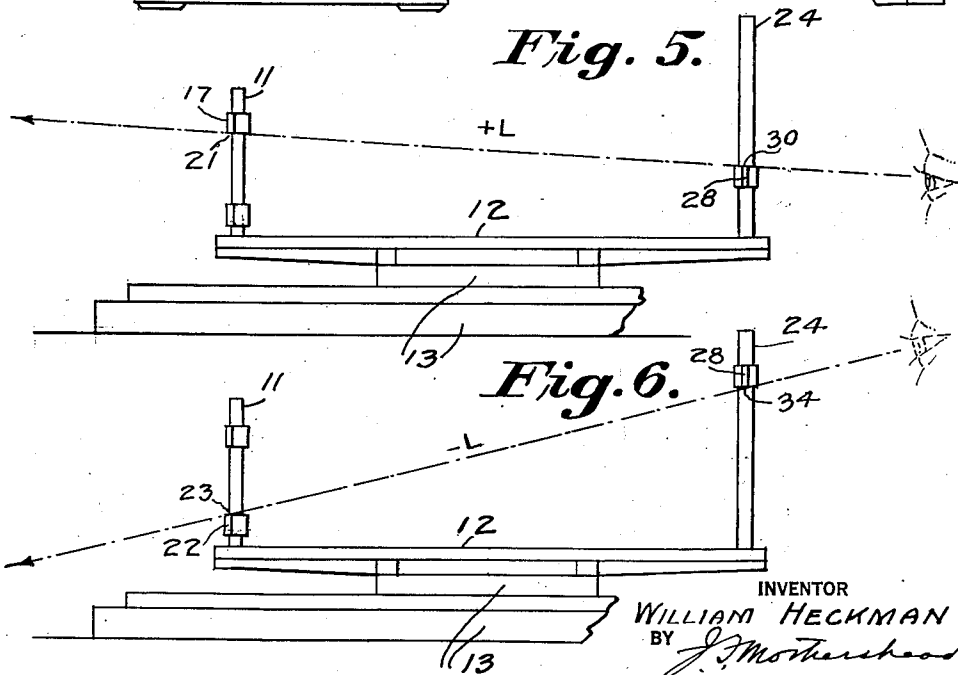


Fig. 5.

Fig. 6.

INVENTOR  
WILLIAM HECKMAN  
BY *J. Motherhead*  
ATTORNEY

# UNITED STATES PATENT OFFICE

2,469,387

## CONVERSION UNIT FOR FIRE FINDERS

William Heckman, Longmire, Wash., assignor to the United States of America as represented by the Secretary of the Interior

Application December 4, 1946, Serial No. 713,947

3 Claims. (Cl. 33—71)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

1

The invention described herein may be manufactured and used by or for the Government of the United States for governmental purposes without the payment to me of any royalty thereon in accordance with the provisions of the act of April 30, 1928 (ch. 460, 45 Stat. L. 467).

My invention relates to a conversion unit for "fire finders" which enables a "lookout" at a lookout station to determine the bearing and vertical angle to a fire from his station. With these observations and an oriented topographic map of the adjacent terrain mounted within the fire finder, the "lookout" is enabled to find on the map an approximate location of the fire with respect to one or more prominent adjacent landmarks. This information is then transmitted by him to a district ranger or a fire dispatcher for use in sending rangers to extinguish or check the spread of fire. At night or when visibility is poor, the vertical and two horizontal "hairs" of the usual sights on these finders become indistinguishable, so that the use of these fire finders has been restricted to daytime use. My improvement extends the use of these instruments to include observations when visibility is low and particularly for observations at night, without materially altering the present method used in making the observations and calculations based on such observations.

Prior to my invention attempts to adapt fire finders for observations at night where made with various means for artificially illuminating the cross hairs, but all such illuminating means proved unsatisfactory because the light was also reflected by all surfaces facing the observer, or produced reflected light from supporting members of such intensity as to obscure the viewing of the fire and/or some readily identified topographic feature adjacent thereto.

In the accompanying drawings which illustrate a preferred embodiment of my invention,

Figure 1 shows a front sight of an "Osborne" type of fire finder to which my upper and lower laterally projecting attachments have been clamped.

Figure 2 is a central longitudinal section of one of my front sight attachments.

Figure 3 shows a rear sight of the fire finder on which my single laterally projecting sighting attachment is adjustably clamped and is provided with a large window which exposes a portion of a tangent scale on said sight and a small window aligned with a sighting slot in said sight.

Figure 4 is a central longitudinal section of my rear sight attachment shown in Figure 3.

2

Figure 5 is a diagrammatic side elevation of an Osborne fire finder equipped with my conversion unit, showing by dotted lines the line of sight when on a fire which is above the lookout station.

Figure 6 is a view similar to Figure 5 showing a line of sight on a fire below the lookout station.

In these drawings, 11 (Fig. 5) indicates a front sight of a fire finder which is mounted on a ring 12 which is free to be manually rotated on a turntable 13 and having the customary graduated azimuth circle (not shown) within which is mounted a stationary contour map of terrain surrounding a lookout station (not shown). This sight is provided with a "vertical cross hair" 14 and upper and lower horizontal cross hairs 15 and 16 (Figure 1) for fixing by means of their intersections an upper and a lower line of sight. Because these cross hairs are not visible at night or when visibility is poor, the fire finder becomes inoperative at such times. The said fire finder is provided with a rear sight 24 mounted on said ring 12 diametrically opposite the front sight 11. The rear sight 24 is provided with an elongated sighting slot 25, an upwardly numbered tangent scale 26 and a downwardly numbered tangent scale 27; these scales being arranged on opposite sides of the sighting slot 25. The scale 26 is used for reading angles of depression when sighting on fires below the lookout station, and the scale 27 is used for reading angles of elevation to points which are above the station.

For the purpose of extending the use of such fire finders, I provide a conversion unit which includes an upper shutter 17 formed of suitable folded resilient sheet material having a front channel portion 18 adapted to fit over a side bar of the front sight 11, a rear portion 19 and suitable means, such as a threaded screw 20, for clamping the shutter to the front sight with a lower edge 21 in alignment with the cross hair 15 and a similar lower shutter 22 which is clamped to the sight 11 with its upper edge 23 in alignment with the cross hair 16.

My conversion unit also includes an adjustable rear sight shutter 28 similar to my shutters 17 and 22 adapted to be adjustably clamped to the rear sight 24, and provided with a scale exposing opening 29, an upper sighting edge 30 which is used for angles of elevation and a lower sighting edge 34, which is used for angles of depression a small sighting opening 31 aligned with the slot 25, a suitable mark 32 for reading the divisions on the scales 26 and 27, and a thumb nut 33 for at will clamping said rear shutter to said rear sight.

3

My conversion unit is attached to the usual front and rear sights of a common form of fire finder, to provide a sighting means suitable for use at night as well as while visibility is good. The method of using a "fire finder" equipped with my conversion unit for reading angles of depression (see Figure 6) comprises aligning the vertical edge of the rear sight 24 with the fire or other target, sighting over the edge 23 of the shutter 22 at the target which should then partially obscure the latter, the rear shutter attachment is then lowered until the lower sighting edge is in alignment with the line of sight from the target to the sighting edge 23 and clamped with the thumb nut 33, the remainder of the target being then obscured by the shutter attachment 28. The angle of depression is then read on the scale 26, with the aid of artificial light, if necessary. Angles of elevation are measured in the same manner, using the upper sighting edge 30 of the shutter attachment 28 and the lower edge 21 of the front sight attachment 17. These scale readings should be corrected by the subtraction or addition of the constant difference in reading between the sighting edges 30 or 34 and the central line of the shutter 28 as indicated by the mark 32. This method of using the device with my conversion unit does not differ materially from the method used for day time observations with the common form of fire finder and therefore avoids any confusion when observing either at night or during daylight.

While I have shown and described a preferred embodiment of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims in which it is my intention to claim all novelty inherent in my invention as broadly as possible in view of the prior art.

What I claim is:

1. In a fire finder of the type adapted for orientation at a fixed lookout station comprising a revolubly mounted sight bearing ring, a front sight and a rear sight mounted on said ring at opposite ends of a diameter, a support within said ring for a contour map of the area assigned

4

to the station and suitable graduations on said ring and said rear sight, the combination with a conversion unit which comprises a shutter extending laterally from said front sight and having a horizontal edge adapted to be aligned with a horizontal wire of said front sight and a companion laterally extending shutter having a horizontal edge adjustably mounted on said rear sight.

2. A device defined in claim 1 having a second shutter extending laterally from said front sight with a horizontal edge aligned with a second horizontal wire of said front sight.

3. In a fire finder of the type adapted for orientation at a fixed lookout station comprising a revolubly mounted sight bearing ring, a support within said ring for a contour map of the area assigned to the station and suitable graduations on said ring, a front sight provided with a sighting slot traversed by a vertical sighting wire and spaced upper and lower horizontal wires, and a rear sight provided with a suitable sighting slit and suitable graduations adjacent to said slit, the combination with a conversion unit which comprises two adjustable shutters adapted to be clamped to said front sight each with a portion extending transversely of the line of sight with a horizontal edge of each shutter aligned with one of said horizontal wires and a companion rear shutter mounted on said rear sight adapted to be adjustably clamped thereto and provided with a scale exposing window and a sighting opening aligned with a sighting slot of the rear sight.

WILLIAM HECKMAN.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

| Number    | Name          | Date          |
|-----------|---------------|---------------|
| 343,558   | Wright -----  | June 8, 1886  |
| 1,936,846 | Leupold ----- | Nov. 28, 1933 |

#### FOREIGN PATENTS

| Number  | Country      | Date          |
|---------|--------------|---------------|
| 827,619 | France ----- | Jan. 28, 1938 |