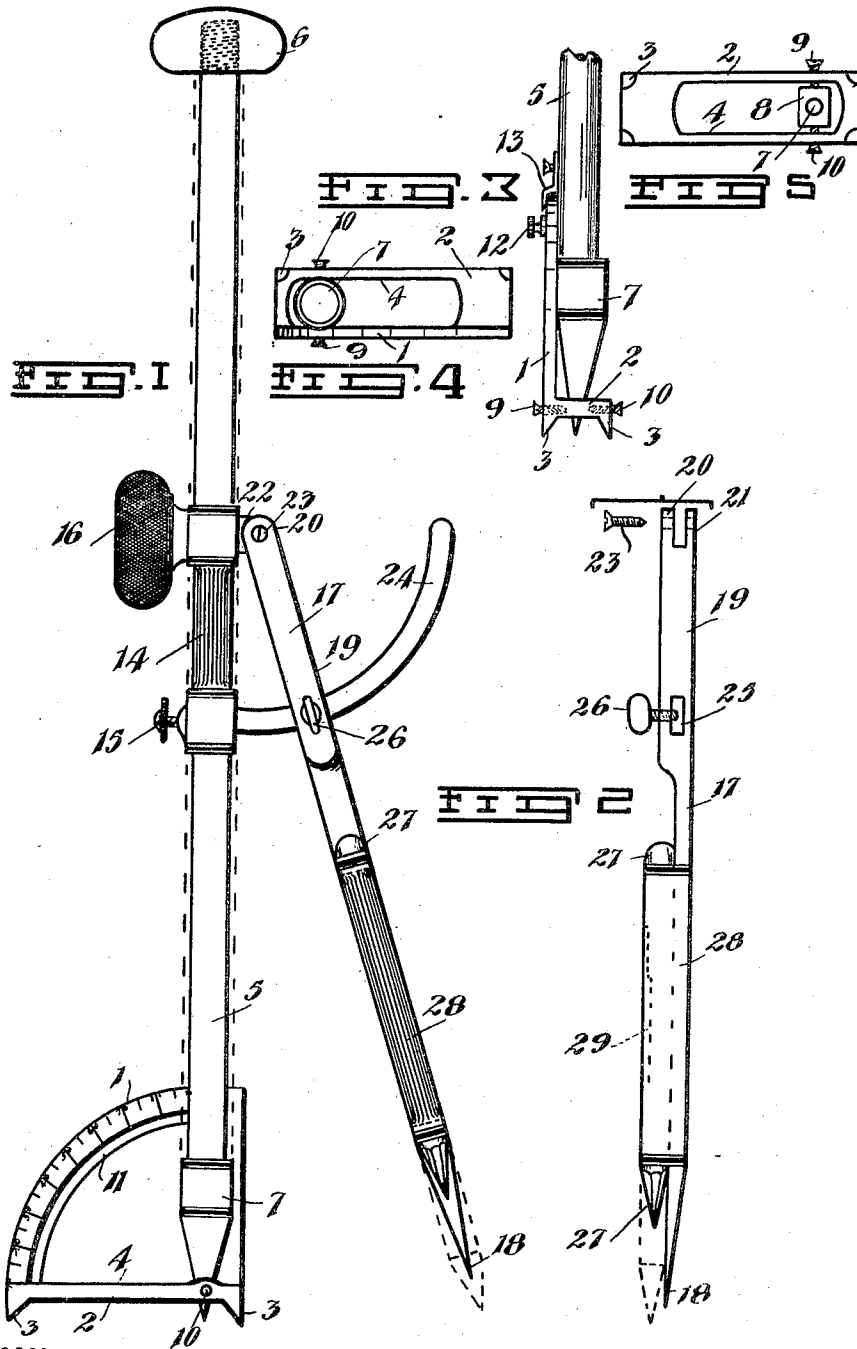


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COMPASSES.

APPLICATION FILED JUNE 13, 1908. RENEWED DEC. 14, 1910.

988,188.

Patented Mar. 28, 1911.



Witnesses.

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UNITED STATES PATENT OFFICE.

RICHARD WILLIAM GRAHAM, OF WINNIPEG, MANITOBA, CANADA.

COMPASSES.

988,188.

Specification of Letters Patent.

Patented Mar. 28, 1911.

Application filed June 13, 1903, Serial No. 438,374. Renewed December 14, 1910. Serial No. 597,360.

To all whom it may concern:

Be it known that I, RICHARD WILLIAM GRAHAM, of the city of Winnipeg, in the Province of Manitoba, Canada, contractor, have invented certain new and useful Improvements in Compasses, of which the following is the specification.

My invention relates to compasses, and the object of the invention is to devise a compass which will outline a circle on an irregular surface and which further will draw the projection of a circle on a plane or inclined surface, and it consists essentially in a standard; an adjustable shank sleeved and slidable on the standard, and a quadrant supporting the standard and adjustably interconnected with it, the parts being arranged and constructed as hereinafter more particularly described.

Figure 1 is a side elevation of my complete compass. Fig. 2 is a reverse view of the shank detached, as in Fig. 1. Fig. 3 is a detailed view of the lower portion of the standard and the quadrant showing them in a position at right angles to that shown in Fig. 1. Fig. 4 is a plan view of a portion of the quadrant and its base. Fig. 5 is an inverted plan view of the quadrant and the receiver.

In the drawings like characters of reference indicate corresponding parts in each figure.

I have found considerable difficulty in instances where it has been necessary for me to cut an opening in such places as the inclined roof of a building to allow for the insertion of a pipe. In order to save considerable time and to prevent waste of material I have conceived the compass as now described and although I have mentioned particularly an inclined roof, the compass can be used to great advantage in many other instances which will be apparent when I have described it further.

1 represents a quadrant which is supported by a base 2, the base being at right angles to the quadrant, and having foot pieces 3 supporting it at its corners. The quadrant is marked as is usual, in degrees and minutes, and the base is supplied with an elongated central opening 4, the purpose of which will shortly be explained.

5 is a circular metallic shank provided at the top with a knob 6 and has its lower end passing into a receiver as later described.

The knob is screwed onto the shank as shown in Fig. 1.

7 is a conical receiver having its point passing into and through a plate 8, the plate being pivotally supported by a pair of opposing set screws 9 and 10. The screws are provided with conical points which pass into correspondingly shaped recesses provided in the plate. The lower end of the standard is firmly secured within the opening in the receiver 7.

11 is a slot cut in the quadrant concentric to the screws 9 and 10, and 12 is a thumb screw passing through the slot and screwing into the standard, thereby holding the standard in whatever may be its adjusted position.

13 is an index pointer fastened or secured to the standard adjacent the quadrant and with its end playing over and registering the degrees on the quadrant.

14 is a sleeve slidably supported on the standard and adjustably held in position by a thumb screw 15 which engages with the standard.

16 is a knob supplied on the sleeve in order to make the compass more readily handled when using.

17 is a shank having its lower end pointed at 18 and its upper end enlarged at 19 and provided with lugs 20 and 21 whereby the shank is pivotally fastened to a lug 22 projecting from the sleeve, by a screw 23.

24 is a bar passing outwardly from the sleeve to which it is firmly secured and bent upwardly concentric with the screw 23. The enlarged portion of the shank is provided with an opening 25 into which is passed the bar 24.

26 is an adjusting screw carried by the shank and screwing into the opening and against the bar 24.

27 is a pencil fastened to the shank by a band 28 and secured in position by a flat spring 29 fastened to the interior wall of the band, the spring being adapted to press continuously against the pencil.

In order to understand my invention completely I will now give a short description of the manner in which the compass is used. When it is required to draw the projection of a circle in the horizontal plane on an inclined plane such as a roof, the standard is held vertically, or at right angles to the plane of the circle. The shank is set by the screw 25 so that the distance from the pen-

5 cil point to the tip or apex of the receiver 7
is equal to the radius of the circle. The
shank is then turned by the knob 16 and the
standard is kept stationary in the vertical
10 position. As the shank is secured to the
sleeve which is slidable on the standard it
can accommodate itself to the condition
caused by the inclination of the roof. When
the shank has been turned completely around,
15 the projected circle will be outlined by the
pencil point on the inclined surface. The
compass can with equal advantage be used
where one is drawing plans and requires a
projection of a similar circle such as that
20 already mentioned. In the above case the
shank of the compass is kept in the vertical
position and the roof is inclined, but in the
latter case the plan on which the drawing is
being made is in the horizontal plane and
25 the standard is inclined to whatever the angle
of the roof may be. The pencil point is
set as before at the proper distance from the
apex of the receiver and the quadrant rests
on the horizontal surface. The standard is
adjusted to the angle of the roof by means of
the screw 12, and when holding it in this
position the shank is turned on the standard.
The pencil point will outline on the hori-

zontal surface the same projection as is out-
lined on the inclined surface. If it be de- 30
sired to use the compass to outline a circle
the standard with the receiver is removed
from the quadrant by loosening the screw 12
and raising the point of the receiver from
the opening in the plate 8. 35

What I claim as my invention is:

A compass comprising a standard having
a pointed end, a plate 8 having a hole therein
into which the pointed end of the standard
passes, a base having a slot therein, screws 40
passing through the base and pivotally sup-
porting the plate 8 in the slot therein, a
quadrant secured to the base and having a
slot therein concentric to the screws and hav-
ing graduations thereon, a thumb screw pass- 45
ing through said slot and engaging the
standard, and a pointer on the standard co-
operating with the graduations of the quad-
rant.

Signed at Winnipeg, in the Province of 50
Manitoba, this 21st day of April 1908.

RICHARD WILLIAM GRAHAM.

In the presence of—

JAS. M. TAPLEY,

GERALD S. ROXBURGH.