March 19, 1929. S. F. BURROWS 1,705,958

SUPPORTING OF CRADLES FROM CROWNED, DOMED, OR SIMILAR STRUCTURES

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FIG. 1.

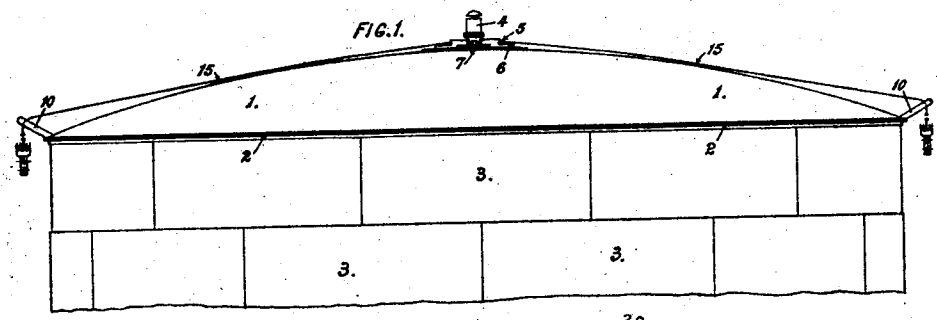
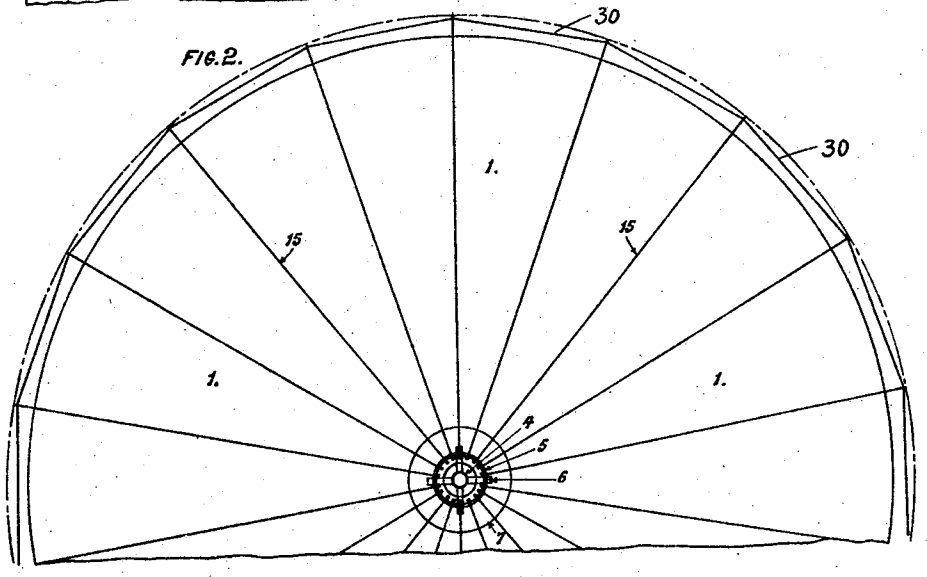


FIG. 2.



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FIG. 3.

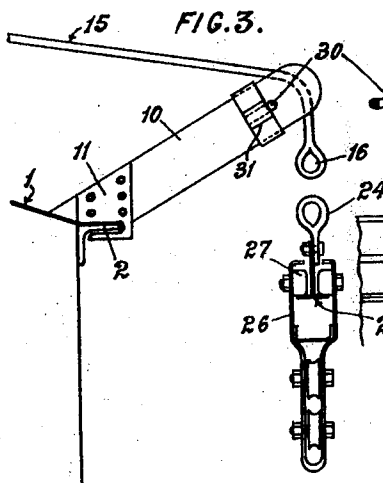


FIG. 4.

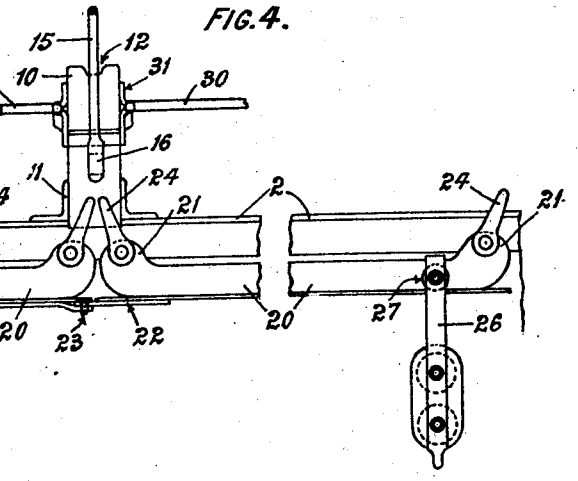


FIG. 5.

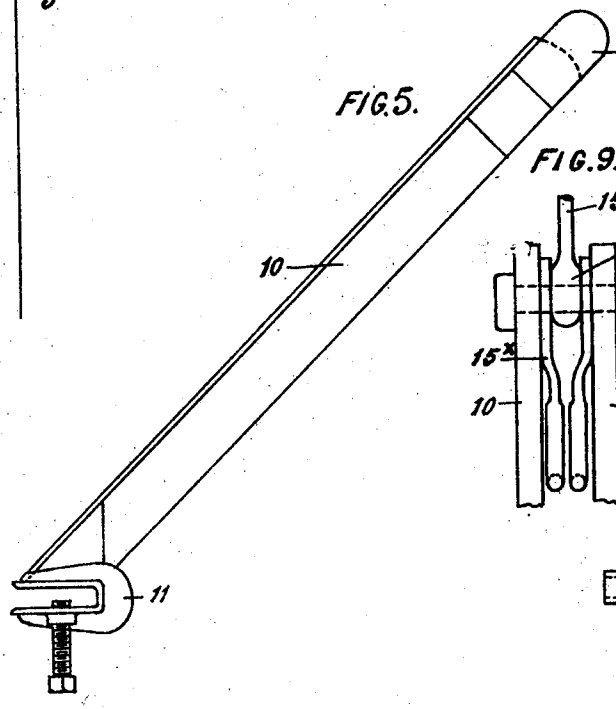


FIG. 6.

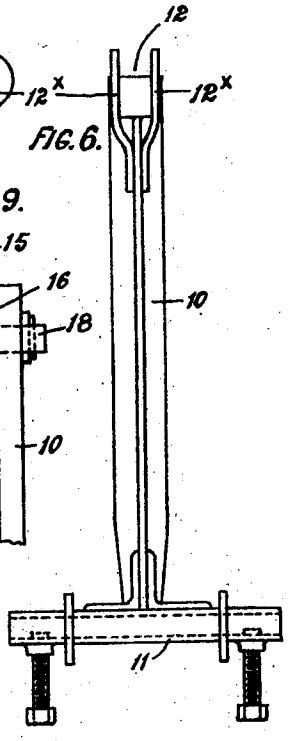


FIG. 9.

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FIG.7.

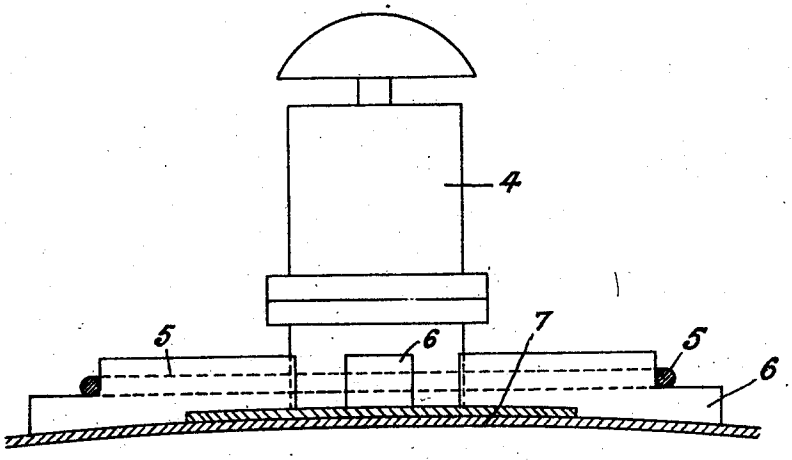
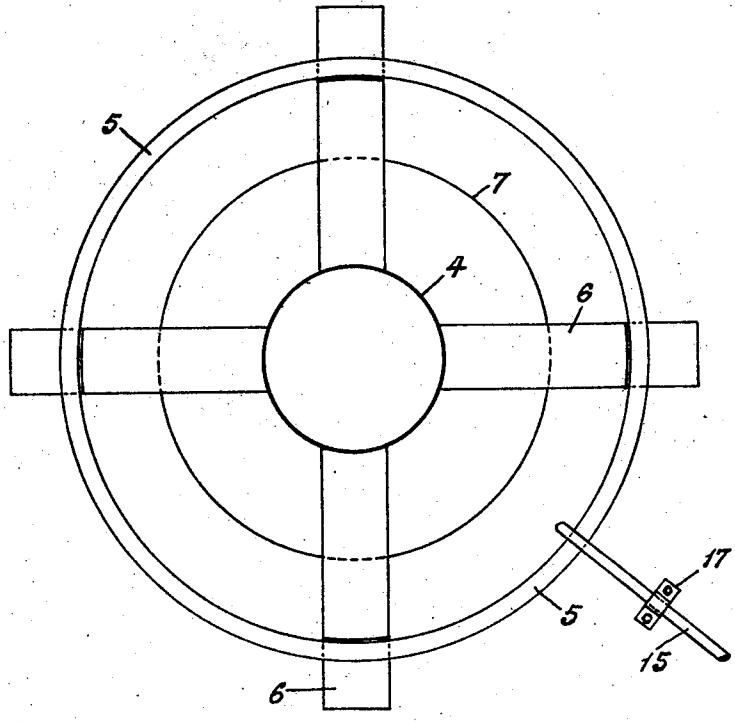


FIG.8.



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Patented Mar. 19, 1929. 1,705,958

UNITED STATES PATENT OFFICE.

SPENCER FREEMAN BURROWS, OF LONDON, ENGLAND.

SUPPORTING OF CRADLES FROM CROWNED, DOMED, OR SIMILAR STRUCTURES.

Application filed January 27, 1927, Serial No. 164,118, and in Great Britain April 29, 1926.

This invention has reference to supporting or suspending rail or plate ways, for "cradles" or the like from crowned, domed or similar or other structures for the purpose mainly of supporting workmen or inspectors for working on such structures, such as painting, repairing or inspecting the exterior of same.

For painting, repairing or inspecting structures, the common method is to use cradles suspended from an overhead support on which the cradles are adapted to be raised and lowered as required by rope or like tackle, that is pulley blocks and ropes; and in some cases the upper portions of this manipulating tackle are supported on connected rails or bars along which they can be run, so that the cradle can be shifted from point to point along the structure; and this invention has reference mainly to this system and means for carrying or supporting these rails, bars or the like from the upper part of the structure, and has, amongst others, for its objects to provide an improved method and means for fixing and supporting the rails or bars by which the cradle or the like tackle is suspended.

Examples of domed or crowned structures to which the invention relates, are oil tanks, gas holders and similar structures, and domed or crowned buildings; and under this invention the suspending or supporting rails, bars or the like, are supported by and from the dome or roof itself by ropes, rope work, chains or the like, which overlie the dome or roof, and are passed over short "cat heads" carried by the dome or crown, and preferably near the edge of same and projecting angularly over same; and to the ends of these ropes, chains or the like the cradle tackle supporting rails or bars are attached or fixed; and these rails or bars are made continuous by connecting them together at their ends by links, studs, or the like.

The inner ends of the suspending ropes or chains are secured or made fast near the centre of the dome or roof, and preferably to a ring secured or held at the said centre.

The cat heads or pulley supports are connected one to the other by connecting rods, links, ropes, or the like so that they are interconnected, and practically continuous.

As an example of the carrying out of the invention as applied to a dome or crown of a structure, say for instance an oil tank or gas holder, or building of circular or polygonal form, from a central point of the dome or crown, and to a ring or the like at the centre, the ropes or chains will extend radially, and pass over and lie on the crown or dome to and over the grooves or pulleys in the short cat heads; and to the ends of these ropes or chains the ends or parts of the cradle suspending or supporting rails or bars are attached; while, as stated, the cat heads are connected together by rods, links, ropes or the like, the heads being spaced apart at suitable distances.

The cat heads may be supported at their bases on the angle or corner of the tank by any suitable sockets, bracket, clamp or other attachment, and afterwards easily removed; and in the case of a circular or polygonal structure, the cat heads, and the cradle or cradle tackle suspending rails or bars will extend in continuous manner round the upper part of the structure. Thus not only can a structure be painted, repaired or inspected from top to bottom, but also all round, without moving or refixing of any of the gear or tackle.

By this method and means, when the tackle and means is once fixed it requires no further attention until its removal on the completion of the work; and thereby obviates slow and cumbersome manipulation of tackle as now commonly employed.

Whilst the invention is particularly advantageous in connection with domed or crowned structures such as those referred to, it is not restricted to them.

The invention, the nature of which is above described, is illustrated in the annexed drawings which show it applied to a structure such as a petroleum tank, gas holder, or other similar structure.

In the drawings, Figure 1 is a plan showing a part of the gas holder or tank, and Figure 2 is an elevation. Figures 3 and 4 are side elevation and end view of the rope cat heads, and the endless rail track; Figures 5 and 6 are details showing a modified form of cat head; and Figures 7 and 8 are elevation and plan showing the construction of parts to which the inner ends of the suspending or carrying ropes are secured; and Fig. 9 is a detail view.

Referring to the drawings, 1 is the roof of the fluid holder or tank, 2 is a projecting flange at the meeting of the roof 1 and the body portion 3 of the tank, and 4 is a central structure on the roof, in the case of an oil tank it being a ventilating tube, and by the latter, the rope securing and holding ring 5

is held in place, the ring lying in a recess in the ends of the radial members 6 which project out from and are supported by the central column 4, and fixed on a crown plate 7, so that the ring 5 is held centrally in position in relation to the centre of the tank, and is raised and held above the tank top by the lower portions of the members 6 which project out beyond the upper portion, and serve as seats for the ring.

The cat heads are marked 10, and they are formed or provided with fittings at their bases shown at 11 in Figure 3 and 11^{x} in Figures 5 and 6, which rest on or may be secured to the upper corner of the tank or flange 2, as illustrated by the drawings showing modifications of the cat heads; while at their outer ends they are formed with a recessed part or groove 12, in which the ends of the suspending ropes 12 lie.

The ropes 15 are, at their outer ends, provided with eyes 16, while at their inner ends they may be passed over the ring 5, and bound by any usual or preferred form of clamp cleats 17 or the like, or may be provided with a hook at this end, which may hook over the ring 5.

When the ropes are loose and secured by clamp cleats 17, or otherwise bound or made fast, one set of ropes can be used for various sizes of tanks.

In the case shown, the cradle supporting rails consist of a multiplicity of bars 20, which are of inverted T bar shape, and at their adjacent ends the vertical webs are severed from the flange portion 21, and at their opposite ends are provided with a plate 22 riveted to the flange, which are made to overlap as shown in the drawing, Figures 3 and 4, and are secured together by pins or bolts 23 or the like, so that they are held rigidly together, and constitute a continuous track or railway. The rails or bars are provided at their ends with swivel eyes 24, and these eyes may be attached to the eyes or thimbles 16 of the ropes 15 by lashings, or by hooks suspended from the eyes 16, or the like.

The pulley blocks for supporting the cradle, and from which the cradle can be raised and lowered for painting or attending to the outside of the tank, have at their upper parts, plates 26 which carry on their insides, rollers 27 which run on the upper surfaces of the flanges of the rails or bars 20.

In some cases, the cat heads 10 are connected together at or near their outer ends by means of rods or ropes 30, so that they are supported one from the other in a circular direction, and when these connecting means are rods they may be provided with hooks at their ends, adapted to engage with corresponding eye or socket devices 31 on the cat heads.

According to a modification, the ropes 15 may be fixed at the upper ends of the cat heads 10; namely, the eyes (16) of the ropes may lie in recesses in the outer ends of the cat heads, and pins 18 passed through the cat heads and the eyes, and through eyes of links 15^{x}, to which the eyes 24 of the rails are fastened, as indicated in Figure 9.

It will be seen that with the cat heads seated on the angle of the tank or secured together as herein described, with the ropes 15 lying in recesses on the ends of same, and supporting the weight of the cradle, the cat heads will be held in position by the resultant thrust on them inwards due to this weight; and in some cases the lower ends of the cat heads may be provided with brackets or parts 13 of U-form, one member of which lies on the top of the flange 2 of the tank, and the other below it, and they may be provided with clamping screws or the like, which screw on to the surface of the tank flange.

The type of cat head bracket just described, having clamping or fixing screws, is shown in Figures 5 and 6; and in this case the cat head is made of a T bar, the upper end being formed by two plates 12^{x} spaced apart, and secured on to the web of the bar.

What is claimed is:—

1. In apparatus for supporting a track from the roof of a crowned, domed or similar structure for supporting cradles for workmen, inspectors or the like, a track, a multiplicity of flexible elements overlying the roof, securing means carried by the roof to which the inner ends of the flexible elements are secured, and supports projecting upwards and outwards from the edge of the roof, between the ends of which and the securing means the flexible elements extend, the track being below the ends of the supports and suspended from them.

2. In apparatus for supporting a track from the roof of a crowned, domed or similar structure for supporting cradles for workmen, inspectors or the like, a track, a multiplicity of flexible elements extending over the roof, securing means carried by the roof to which the inner ends of the flexible elements are secured, and supports projecting upwards and outwards from the edge of the roof, and members extending between and connecting together the said supports, the track being below the ends of the supports and suspended from them.

In testimony whereof I have subscribed my name to this specification.

S. FREEMAN BURROWS.