Jan. 1, 1952 DE FOREST ROE 2,581,298

UNIVERSAL SHEAVE BRACKET ASSEMBLY

Filed Dec. 8, 1949 2 SHEETS—SHEET 1

FIG. 1.

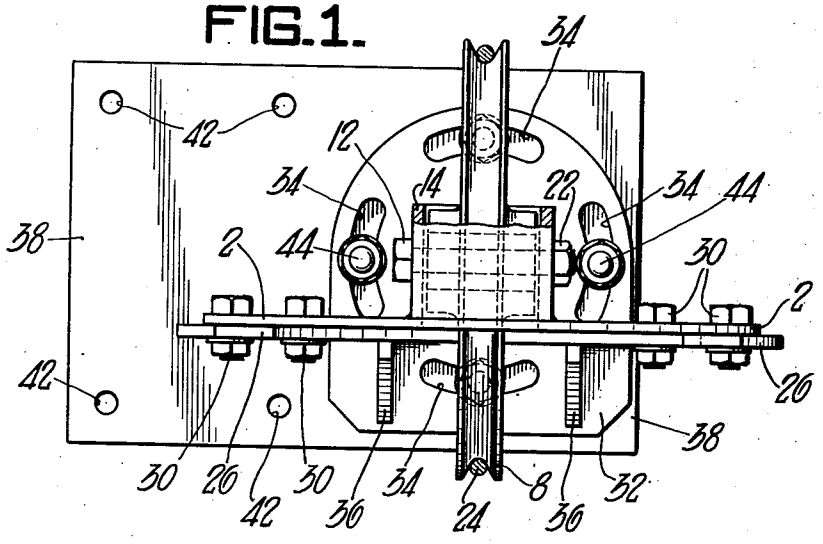
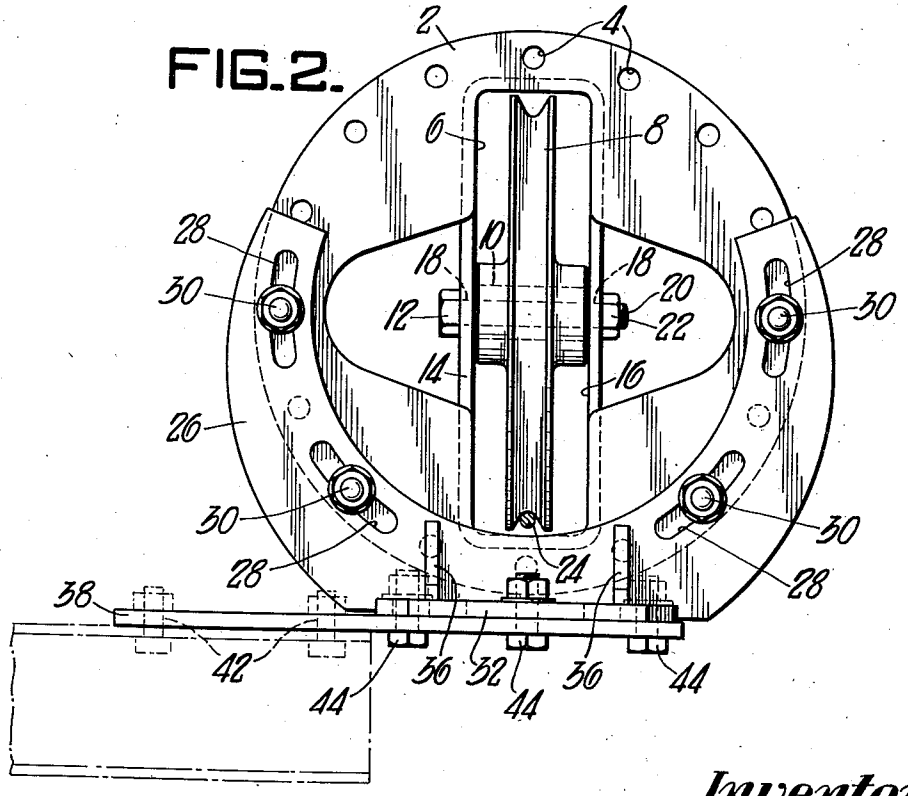



FIG. 2.




*Inventor:*
DE FOREST ROE,
by: Donald G. Dalton
his Attorney.

Jan. 1, 1952 DE FOREST ROE 2,581,298

UNIVERSAL SHEAVE BRACKET ASSEMBLY

Filed Dec. 8, 1949 2 SHEETS—SHEET 2

FIG. 3.

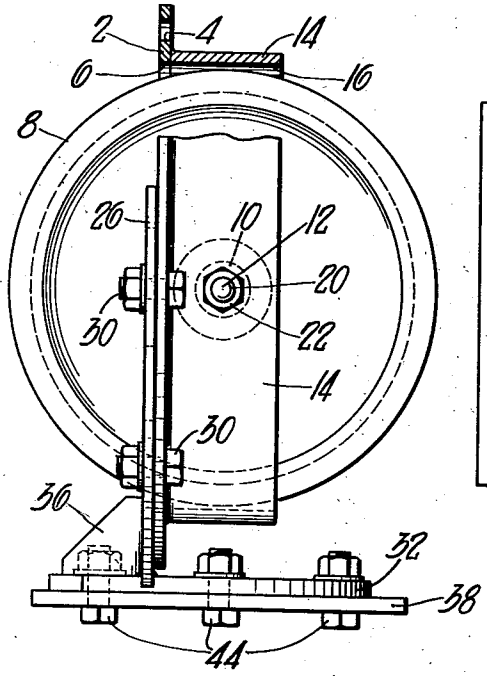



FIG. 5.

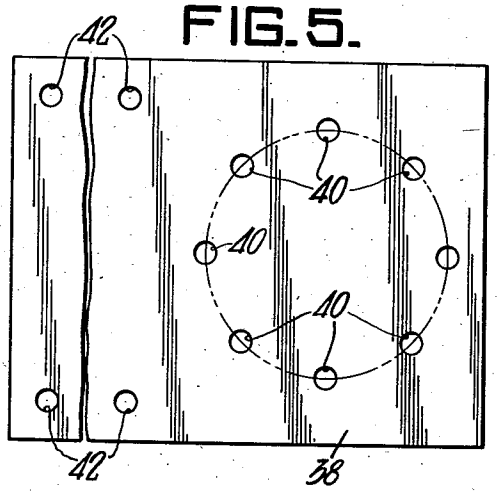
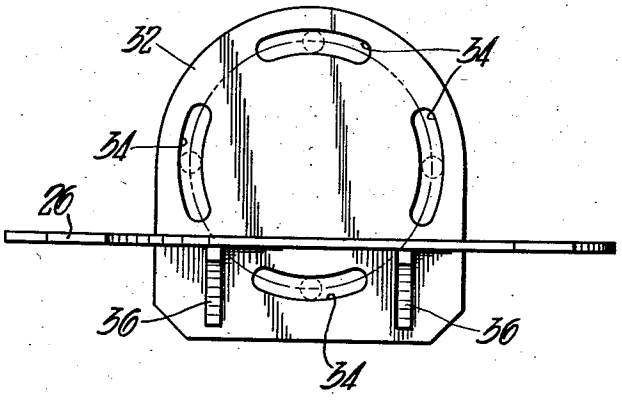



FIG. 4.




*Inventor:*
DE FOREST ROE,
by: Donald G. Dalton
his Attorney.

Patented Jan. 1, 1952 2,581,298

# UNITED STATES PATENT OFFICE

2,581,298

## UNIVERSAL SHEAVE BRACKET ASSEMBLY

De Forest Roe, Pittsburgh, Pa., assignor to United States Steel Company, a corporation of New Jersey

Application December 8, 1949, Serial No. 131,755

3 Claims. (Cl. 254—190)

1

This invention relates to sheaves and the like and more particularly to a universally adjustable bracket mounting assembly therefor.

In many industries, rope or cable or the like is the most effective means of performing certain work, such as conveying, handling, manipulating, etc. To effect the work desired, power is usually applied at one end of the rope to perform work at the other end. The rope usually passes over one or more sheaves which are located at points where it is necessary to change the direction of travel of the rope. In order that the rope may travel in the sheave grooves with the least amount of wear and resistance, the rope plane must be carefully determined and the sheave groove placed in that plane to insure a properly adjusted sheave position after the sheave has been installed. If a rope travels in a straight line, the sheave position supporting the rope is said to be normal. In other words, the sheave groove is vertical and in line with the rope.

Sheave bracket mounting assemblies must meet specific requirements for each particular location; and prior to my invention, determination of the proper rope and sheave plane angles to suit each location entailed considerable engineering and complexity of design which often resulted in engineering and fabricating shop errors. Before mounting the sheave, the designer had to determine how many degrees it would swing to the right or left from a normal sheave position while performing the desired work. It was also necessary for him to determine the exact angle from the vertical to which the sheave plane had to be tilted. All this required much time and careful calculations before installation.

It is accordingly an object of my invention to provide a universal-type sheave bracket assembly which will permit the sheave to be angularly adjusted for swing and tilt after mounting easily and quickly without the necessity of complicated preparatory calculations.

This and other objects will become more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a plan view;

Figure 2 is an elevational view;

Figure 3 is an elevational view partly in section turned 90 degrees from Figure 2;

Figure 4 is a plan view showing the detail of the cradle-supporting disc; and

Figure 5 is a plan view of the base used for mounting the invention.

Referring more particularly to the drawings, reference numeral 2 indicates a circular steel plate with a plurality of holes 4 equidistantly spaced in a bolt circle near the outer circumference of the plate. The plate 2 is provided with an elongated center opening 6 which provides clearance for the rotation of a sheave 8

2

therein. The sheave 8 together with a sheave bearing 10 and a sheave pin 12 is supported by a sheave bracket 14 which is also provided with an elongated opening 16 therethrough similar to the opening 6 in the plate 2. The bracket 14 is rigidly mounted on the face of plate 2 with the opening 16 therein aligned with the opening 6. The bracket 14 is also provided with complementary holes 18 in its sides for receiving the pin 12. Pin 12 is provided with a threaded end 20 and a nut 22 to hold the sheave wheel 8 and sheave bearing 10 in place. Bracket 14 is of sufficient length to provide suitable clearance for sheave 8 and a rope 24 fitted in the groove of the sheave 8 and at the same time prevent the rope from becoming disengaged from the sheave groove in event of looseness of the rope.

A sheave cradle 26, consisting of a semi-circular plate which is provided with four curved slots 28, supports the plate 2 in an upright position as will be more fully described hereinafter. The center line of the slots 28 coincides with the bolt circle on the plate 2. As seen in Figure 2, the plate 2 is secured to the cradle 26 by means of bolts 30. The plate 2 is rotated until the approximately correct tilted position desired is attained before the bolts 30 are inserted. A bolt 30 is inserted loosely through each of the slots 28 and the bolt hole 4 which is aligned therewith. Plate 2 is then adjusted to the exact tilted position required by sliding the loosely fitted bolts in the slots. The plate is finally secured, after the assembly has been installed, by tightening the bolts 30. Thus, any angular adjustment in 360 degrees for the plane of sheave 8 may be quickly and easily obtained. Generally, one bolt in each slot is sufficient to obtain strength and rigidity.

Cradle 26 is rigidly mounted on a disc 32 having four curved slots 34 spaced in a circle adjacent its edge. The curvatures of slots 34 follow the curvature of the disc edge. Plates 36 are provided to furnish additional support for alignment and rigidity of the cradle 26 on disc 32. The disc 32 is adjustably mounted onto a flat base member 38. The base member 38 is individually designed to suit the character of the structure to which the sheave bracket assembly must be mounted. Base member 38 is provided with a series of bolt holes 40. Bolt holes 40 are equidistantly spaced to make up a bolt circle. Each of the bolt holes 40 has a diameter equal to the bolt diameter of the slots 34. Additional bolt holes 42 are provided in base member 38 so that it may be easily attached to the structure on which it is desired to mount the sheave assembly. The disc 32, on which the cradle 26 is fixedly mounted, is placed on the base member 38 with the center line of the slots 34 therein aligned with the bolt circle formed by the bolt

holes 40. The disc is then rotated until the approximately correct angular position for disc 32 is attained after which a bolt 44 is inserted through each of the slots 34 and the bolt hole 40 which is aligned therewith. With the four bolts 44 temporarily loose, the cradle 26 may be swung to any conceivable angle (360 degrees) until the position desired is achieved when the bolts may be tightened to provide rigid support.

When the circular plate 2, with sheave installed therein, is mounted loosely onto cradle 26 and the disc 32 is mounted, also loosely, onto the base member 38, the sheave bracket assembly is ready for installation and final adjustments. The erector does this by swinging and tilting the device until the sheave plane corresponds properly with the rope plane.

An important feature of my invention is the fact that after a bracket assembly has been located and it is discovered that the rope interferes with some portion of the structure or equipment on which it is mounted, it may be easily readjusted, thereby eliminating the necessity of designing and fabricating a new bracket assembly. It may also be noted that the easy adjustability of my bracket assembly makes it possible for it to be transferred from one location to another with little trouble.

This invention is not necessarily limited to the arrangement shown and described. It is obvious that the holes and the slots in the parts described could be interchanged, or slots alone provided and the device would still function in the manner intended. The number of holes and/or slots is not of consequence except that sufficient holes and/or slots must be provided to insure 360 degrees angular adjustment, with a proportionate number of bolts to insure adequate rigidity.

Although I have shown nuts and bolts as fastening means, it is obvious that other means, such as screws or the like, may be used equally as well.

While one embodiment of my invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. A universally adjustable sheave bracket assembly comprising a circular plate having a series of transverse holes along its edge and an elongated center opening through its face, a sheave rotatably mounted in said elongated opening with its axis normal to the axis of said circular plate, a cradle having openings in the side thereof, said plate being adjustably mounted in upright position on said cradle with the transverse holes in the lower part thereof being aligned with the openings in the cradle, fastening means inserted through the transverse holes in the plate and the openings in the cradle to hold said circular plate in position, said circular plate being adapted to be rotatably adjusted to any position within 360 degrees about its axis in a plane normal to the plane of rotation of said sheave by realigning the transverse holes and the last named openings, a base member for adjustably mounting said cradle thereon, and means on said cradle and cooperative means on said base member for rotatably adjusting said cradle to any position within 360 degrees about its vertical axis in a plane normal to the plane of rotation of said circular plate.

2. A universally adjustable sheave bracket assembly comprising a circular plate having an elongated center opening, a sheave rotatably mounted in said elongated opening with its axis normal to the axis of said plate, a cradle member fixedly mounted on a disc member having holes along its edge, the circular plate being adjustably mounted in upright position on said cradle, means on said plate and cooperative means on said cradle for rotatably adjusting said circular plate to any position within 360 degrees about its axis in a plane normal to the plane of rotation of said sheave, said disc member being adjustably mounted on a flat base member having a series of holes therein, said last named holes being arranged in a circle aligned with the holes in the disc member, and fastening means inserted through the holes in said base member and said disc to hold the same in position, said disc being adapted to be rotatably adjusted to any position within 360 degrees about its axis in a plane normal to the plane of rotation of said circular plate by realigning the holes in the disc with the holes in the flat base member.

3. A universally adjustable sheave bracket assembly comprising a circular plate having a series of transverse bolt holes along its edge and an elongated center opening through its face, a bracket frame having an elongated center opening mounted on the circular plate with its center opening aligned with the elongated opening in the circular plate, a sheave rotatably mounted in said bracket frame with its axis normal to the axis of said plate, a cradle member having elongated openings in the side thereof fixedly mounted on a slotted disc member, the slots in said disc being curved to follow the curvature of the disc edge, the elongated openings in the cradle being curved according to the curvature of the circular plate, the circular plate being adjustably mounted in upright position on said cradle with the transverse bolt holes in the lower part thereof being aligned with the elongated openings in the cradle, nut and bolt means inserted through the transverse bolt holes in the plate and the elongated openings in the cradle to hold said circular plate in position, said circular plate being adapted to be rotatably adjusted to any position within 360 degrees about its axis in a plane normal to the plane of rotation of said sheave by realigning the transverse bolt holes and the last named elongated openings, said disc member being adjustably mounted on a flat base member having a series of bolt holes therein, said last named bolt holes being arranged in a circle aligned with the curved slots in the disc member, and nut and bolt means inserted through said bolt holes and said curved slots to hold the disc in position, said disc being adapted to be rotatably adjusted to any position within 360 degrees about its axis in a plane normal to the plane of rotation of said circular plate by realigning the slots in the disc with the bolt holes in the flat base member.

DE FOREST ROE.


REFERENCES CITED

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

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 479,296 | Murray | July 19, 1892 |
| 519,364 | Whitcomb | May 8, 1894 |
| 1,589,776 | Warden | June 22, 1926 |