Dec. 4, 1928. 1,694,350

R. R. BLOSS

WHEEL FOR DRILLING RIG STRUCTURES

Original Filed April 25, 1925

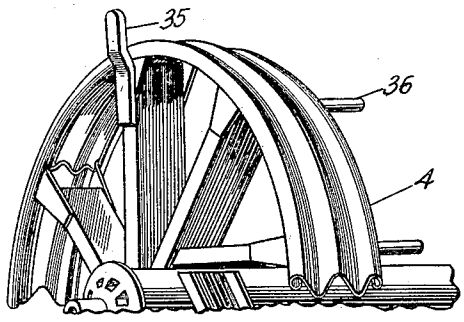


Fig. 3

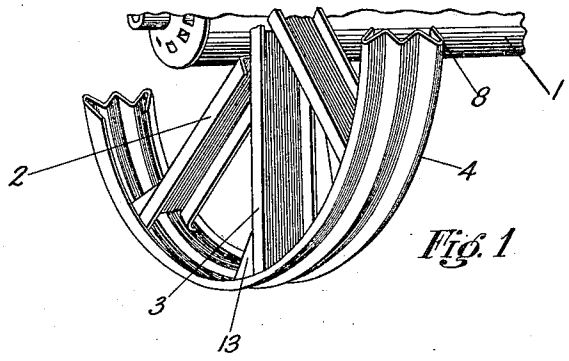


Fig. 1

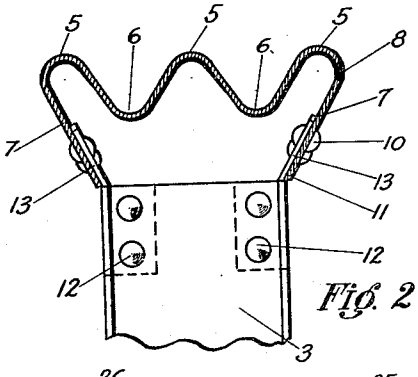


Fig. 2

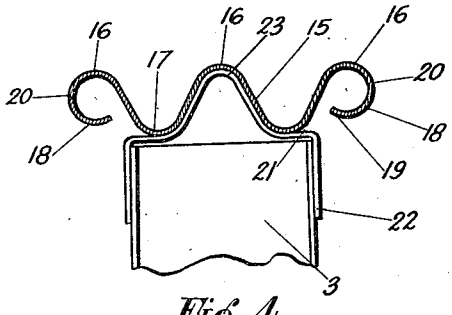


Fig. 4

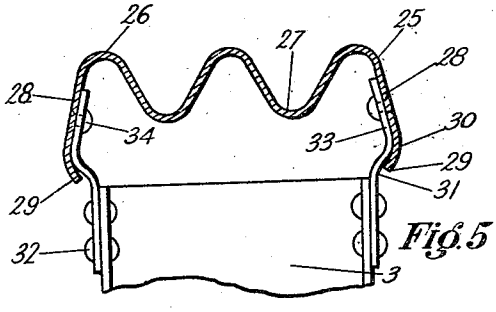


Fig. 5

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UNITED STATES PATENT OFFICE.

RICHARD R. BLOSS, OF COLUMBUS, OHIO, ASSIGNOR TO THE INTERNATIONAL DERRICK & EQUIPMENT COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF OHIO.

WHEEL FOR DRILLING-RIG STRUCTURES.

Application filed April 25, 1925, Serial No. 25,910. Renewed April 7, 1928.

My invention relates to wheels for drilling rig structures and, more particularly, to a novel form of rim for tug wheels on the bull wheel structure, and for tug pulleys.

The strains and stresses imposed upon tug-wheel rim structures employed in drilling rigs are well known to those skilled in the art. Also, it is well known that tug-wheel rim structures require movement from one location to another when they have served their purpose at the one location. Therefore, it is very desirable that such wheel-rim structures be of such construction that assembly and disassembly can be effected readily and easily in a minimum length of time; and that they be of such structure as to facilitate transportation, all of which decreases the possibility of distortion and destruction and, consequently, increase the length of time between overhauling and the length of life of the wheel-rim structures whereby the maintenance cost of drilling rigs is decreased.

In accomplishing the above-mentioned advantages, it is very essential that strength, rigidity of parts, weather endurance, ease of manipulation and weight be borne in mind.

Furthermore, in connection with the usual wooden tug wheels which have wooden rims, wearing of the bull ropes, which drive the tug wheels, takes place very rapidly. Much of this wearing is caused by these ropes contacting with the rather sharp corners of the wooden rim during the application and removal of the bull ropes whereby the ropes may be cut or otherwise damaged.

In the design of a tug rim it is desirable to have a rim that is strong and durable and which can be readily attached to the spokes of the wheel and yet have a smooth surface on the edge of the rim and without any protuberances, so as not to cut or unnecessarily wear the bull ropes when they are taken off or put on the rim.

In carrying out my invention, I provide a tug-wheel rim structure wherein a smooth surface is presented to the bull rope during the application to or removal from the rim, as well as a rim possessing strength, rigidity of parts and lightness in weight.

One of the features of my invention is the provision of a wheel rim constructed of metal and having a corrugated surface for carrying the bull rope.

A further feature of my invention is to so construct a metal tug-wheel rim with smooth flanges or sides so that when applying or removing the bull ropes to or from the bull or tug wheel, any damage or wear upon the bull rope will be prevented.

A still further feature of my invention is the provision of a bull or tug-wheel rim so constructed that the edge of the rim overhangs the protuberances on the wheel, so that the bull rope will not be damaged by such protuberances when being applied to, or removed from the rim.

Other and further objects and features of my invention will be apparent as this description progresses and by reference to the drawings wherein,—

Figure 1 is a perspective view of a tug-wheel structure embodying my invention, the tug wheel being shown with a section thereof removed.

Figure 2 is a sectional view of the tug-wheel rim shown in Figure 1, showing one way in which the rim may be attached to the wheel.

Figure 3 is a perspective view of a tug-wheel structure, showing a modified form of my invention, the tug wheel being shown with a section removed.

Figure 4 is a sectional view of the tug-wheel rim shown in Figure 3, and showing one way in which the rim may be attached to the wheel.

Figure 5 is a sectional view of another form of my invention showing the rope-contacting surfaces and the manner in which the rim may be attached to the wheel.

In the drawings, and with particular reference to Figure 1, I have shown a tug-wheel structure embodying my invention and which comprises a shaft 1, carrying, adjacent one of its ends, a tug wheel 2 having suitable spokes 3 and rim 4.

The rim 4 is preferably formed of a single length of metal and the abutting ends of this length of metal may be secured together in any desired manner. The rim 4 is corrugated and has ridges 5 and furrows or grooves 6. The furrows or grooves 6 are employed as rope grooves and accommodate the bull rope when it is in position on the tug wheel. The edges of the rim 4 terminate in flanges 7. These flanges 7 preferably extend inwardly toward the shaft 1 and toward each other, substantially parallel to

the adjacent wall of one of the furrows or grooves 6.

By directing the flanges 7 inwardly toward each other, the rim 4 is provided with curved rope-contacting surfaces 8. The rope-contacting surfaces 8 project beyond, or overhang, the surface of the flanges 7 as well as the spokes 3 or other parts of the tug-wheel structure, such as the bolts or rivets which may be employed in securing the rim to the wheel structure.

The rim 4 may be secured to the wheel structure in any desired manner, as by means of rivets or bolts 10, and members 11. As shown in Figure 2, the member 11 comprises an angular-shaped member having one portion thereof secured to a spoke 3 as by means of bolts or rivets 12. The angular member 11 has an upstanding arm 13 which extends parallel with, and so as to contact with, the inner surface of one of the flanges 7. The upstanding portion 13 may be secured to the flange 7 by the use of the rivets or bolts 10. It will be understood that there are two angular members 11 secured to each spoke, and one member 11 attached to each flange 7 of the rim.

In Figures 3 and 4, I show a modified form of my tug rim for tug-wheel structures. In this form, the rim 15 is preferably formed of a single length of material similar to the rim 4 previously described. The rim 15 is corrugated throughout its length, thus having ridges 16 and furrows or grooves 17. In this form, the flanges 18 of the rim 15 terminate in beads, preferably in rounded form, the edges of the beads extending inwardly towards each other at 19.

The beads 18 provide rope-contacting surfaces, as shown at 20. These surfaces 20 extend beyond, or overhang, other parts of the rim 15, and the spokes, and other portions of the tug-wheel structure, thus providing a smooth rope-contacting surface.

The rim 15 may be secured to the tug-wheel structure in any desired manner, but I have shown a plate 21 having arms 22, which arms are adapted to be secured to either side of the spoke 3 in any desired manner as by means of rivets, bolts or by welding. The plate 21 has a ridge 23 adapted to fit into the furrow underneath one of the ridges 16, and the rim 15 is secured to the plate 21 by the use of rivets, bolts, or by the welding process. The tug-wheel structure, plate 21 and rim 15 are thus securely associated with each other.

In Figure 5, I show another form of my invention, in which the rim 25 is corrugated so as to form ridges 26 and furrows or grooves 27 for the purpose of accommodating the rope. In this form, the rim 25 has flanges 28 which extend from the circumference of the rim in a diverging manner, and the flanges have their edges turned inwardly toward each other as at 29. At the point where the edges of the flanges 28 are turned inwardly, smooth rope-contacting surfaces are provided as at 30.

This form of rim may be attached to the spokes 3 of the wheel structure in any desired manner. I have shown one way of attaching the rim, which consists of members 31, one of which is secured to each side of a spoke 3 in any desired manner, as by means of the rivets 32. Each member 31 has an upstanding portion 33 which is shaped so as to fit within the flange 28, and the inwardly-turned edge 29 of the flange. The upstanding portion 33 may be secured to the flange in any desired manner, but I have shown such attachment by means of a rivet 34. The rivet 34 is preferably countersunk in the flange 28 so as to form a smooth surface for contacting with the bull rope when such rope is applied to or removed from the rim.

When the rope is applied to or removed from this rim the rope contacts with the smooth surface of the flange 28, and the rounded surface 30 of the flange. This rim, like the rims shown in Figures 1 and 3, has, preferably, a rope-contacting surface which overhangs the spokes, or other structure of the wheel, so that when applying or removing the rope, the rope will not be cut or otherwise damaged by any protuberances or projections.

The tug wheel is provided with the usual projection 35, commonly known as a dog. The tug-wheel structure is also provided with suitable handles 36, which handles 36 and dog 35 are used in the application or removal of the bull rope to or from the tug wheel, which operation is well known to those skilled in the art.

In applying a bull rope to my tug rim by the use of the dog 35 and handles 36 in the usual manner, the bull rope contacts only with the smooth contacting surface of the rim. This point of contact is the overhanging or projecting curved surface 8 of the rim, shown in Figures 1 and 2, or the overhanging or projecting curved surface 20 of the rim 15, shown in Figures 3 and 4 or the smooth surfaces 28 and 30 of the rim shown in Figure 5. In thus providing smooth rope-contacting surfaces which overhang or project over the tug-wheel structure, and other parts, such as the fastening means 10 or spoke 3, the bull rope is prevented from coming into contact with such projections when being applied to or removed from the tug-wheel rim, and the life of the rope is lengthened by not being damaged or destroyed by coming into contact with such projections.

I have described my rim as being preferably formed of a single length of material, corrugated throughout its length, and having its abutting ends secured in any desired manner. It may, however, be desirable to form

my rim in sections, and this may be accomplished by securing the abutting ends of the sections in a manner similar to the method in which the abutting ends of the rim formed of a single length of material are secured.

While I have described my invention as being adapted particularly to tug wheels and tug pulleys of drilling-rig structures, I do not desire to be limited to such use, but desire that my rim structure may be used wherever such rim structures are employed.

Having thus described my invention, I claim:

1. In tug wheel structure, a rim having a corrugated surface, the sides of which are bent inwardly toward the axis of the wheel, and a projecting member having a portion adjacent the bent sides of said rim bent outwardly in a diverging manner, the bent sides of said rim and the outwardly diverging portion of said projecting member providing a smooth surface to a tug rope when in contact therewith.

2. In tug wheel structure, a rim having a corrugated surface, the sides of which are bent inwardly toward the axis of the wheel, and a dog having a portion adjacent the bent sides of said rim bent outwardly in a diverging manner, the bent sides of said rim and the outwardly diverging portion of said dog providing a smooth surface to a tug rope when in contact therewith.

3. In a bull wheel structure, a tug rim, spokes, and rounded rope contacting surfaces on the sides immediately within the periphery of said rim and protruding laterally beyond the edge of said rim and beyond other abrading surfaces.

In testimony whereof I hereby affix my signature.

RICHARD R. BLOSS.