(No Model.) 2 Sheets—Sheet 1.

J. W. KERR.

ROPE SHEAVE OR WHEEL.

No. 492,331. Patented Feb. 21, 1893.

Fig. 1.

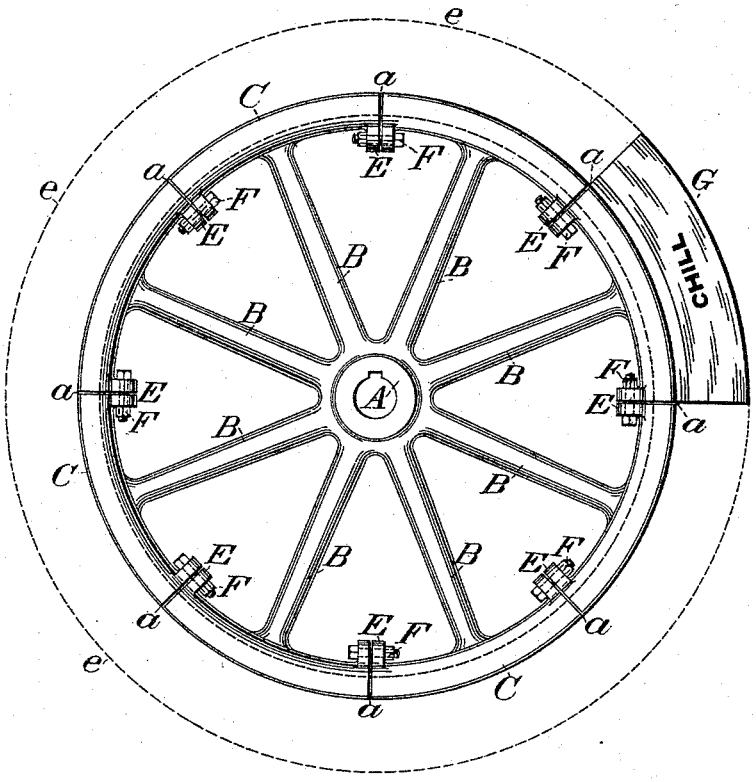
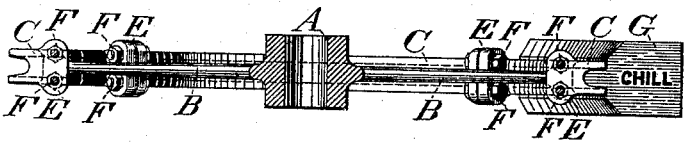


Fig. 2.



Witnesses:

Ed. F. Brandau

Wilson D. Bent Jr.

Inventor:

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(No Model.) 2 Sheets—Sheet 2.

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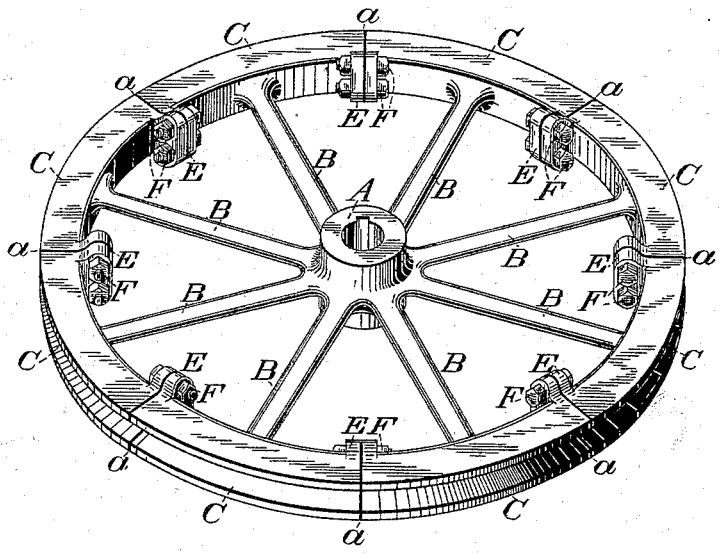
Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES W. KERR, OF SAN FRANCISCO, CALIFORNIA.

ROPE SHEAVE OR WHEEL.

SPECIFICATION forming part of Letters Patent No. 492,331, dated February 21, 1893.

Application filed March 22, 1892. Serial No. 425,930. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. KERR, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Methods of Constructing Rope Sheaves or Wheels; and I hereby declare the following description, with the drawings accompanying the same, to be a full, clear, and exact specification of my invention.

My invention relates to rope sheaves or wheels, such as are employed for the purposes of traction, or in transmitting power by means of ropes, and subject to wear on their periphery, or in the grooves, by reason of grit, sand, or by abrasion of the ropes themselves.

The object of my invention is to supply, at a slightly increased cost, such sheaves or wheels cast in one piece, their periphery of hard material, and the wheels, as a whole, free from inherent strains caused by shrinkage.

My invention consists in casting such wheeels in one piece, the hubs, or naves and spokes being formed in the usual manner, but the rim severed at a number of points, preferably between each pair of spokes, so as to prevent the shrinkage or contraction due to either the use of hard material, or the employment of an iron mold around the rim called a chill, so that the surface will be hardened to a greater or less depth in the same manner commonly practiced in making railway car wheels.

It is common, in constructing sheaves or wheels of the kind, especially when of large size, to make them in pieces which, after fitting, are bolted together, thus avoiding the inherent strains due to contraction or shrinkage of the rims. This has been especially necessary in the case of wheels made of hard material, and indispensable when the rims were chilled by an iron mold.

In my invention, the sheaves or wheels are cast whole but with the rims severed or divided in the mold at a number of points by means of plates or cores placed therein, so that the rims are free to contract according to the kind of metal employed or method of its treatment.

I will now proceed to describe the construction of sheaves or wheels, made according to my invention, and the methods employed therefor, referring to the drawings herewith.

Figure 1 is a side view of a sheave or wheel such as is employed for wire ropes, and for traction or driving purposes, made according to my method. Fig. 2 is a central section through the same wheel parallel to its axis, and Fig. 3 is a perspective view of the wheel as it appears when completed and removed from the chill.

Like letters of reference on the figures indicate corresponding parts.

In casting wheels according to my invention, the nave or hub of the wheels A, and also the spokes B, are molded in the usual manner, either in green sand, a dried mold, or in cores, as the case may be. The rim C I sever by means of thin cores or plates, set in the joints at *a a a a* between each pair of spokes, such cores or plates being compressible or removable, so that shrinkage of the rim C can take place without causing inherent strains in the casting. The wheels are thus cast in one piece, and the strength of the rim C, when severed, is restored or reinforced, when required, by means of lugs E E E, with bolts F F F passing through them, as shown in Fig. 1. The spaces *a a a a*, in the rim where the cores or plates have been removed, I fill with any suitable material so as to restore the strength of the rim as an arch, and to resist heavy strain, as in the case of sheaves or wheels for railway traction purposes.

When the sheaves or wheels are cast from soft iron I employ what are called "chills," thick sections of iron as shown at G, formed on their face or inner side to produce the rope groove as shown in Fig. 2. These chills G, of which but one is shown, are set all around the wheel as indicated by the dotted circle *e e e* in Fig. 1, and by their rapid cooling effect chill the metal in the groove to a state of extreme hardness, in the manner well known and applied to other castings, the perimeter of cast iron railway wheels for example.

It is evident from the drawings that the chilling device is made in separate segmental sections, one of which is indicated at *g;* and that these sections have radially meeting ends, and that they are made to abut against one another and collectively form a complete circle or ring. By thus constructing the chilling device, it is practicable to chill the grooved surface at the periphery of the pulley,

and, after the chilling is effected, to conveniently draw the sections radially out of the groove of the pulley. It will thus be seen that the result of my invention is a new manufacture, such as is defined in my claim hereinafter stated.

It will be understood that my improvement is equally applicable to wheels cast in two parts, so as to be more conveniently mounted, or transported in that form, but such division is unnecessary in any other case, there being no inherent strains, such as form the usual object of dividing sheaves or wheels into sections.

Having thus described the nature and objects of my invention and the method of applying the same in practice, what I claim as new, and desire to secure by Letters Patent, is—

1. A grooved sheave or wheel having its hub, spokes and rim formed integrally or in one piece and its rim chilled and severed radially between the spokes so as to permit contraction thereof, substantially as described.

2. A grooved sheave or wheel having its hub, spokes and rim formed in one piece and its rim chilled and severed radially between the spokes so as to permit contraction thereof, and lugs formed on the rim with bolts passed through the same to reinforce the rim to prevent flexure under heavy strain, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

JAMES W. KERR.

Witnesses:
ALFRED A. ENQUIST,
WILSON D. BENT, Jr.