No. 643,782. Patented Feb. 20, 1900.

J. R. THAME.

FIBER PULLEY.

(Application filed Apr. 23, 1896. Renewed Aug. 8, 1899.)

(No Model.)

FIG. 1.

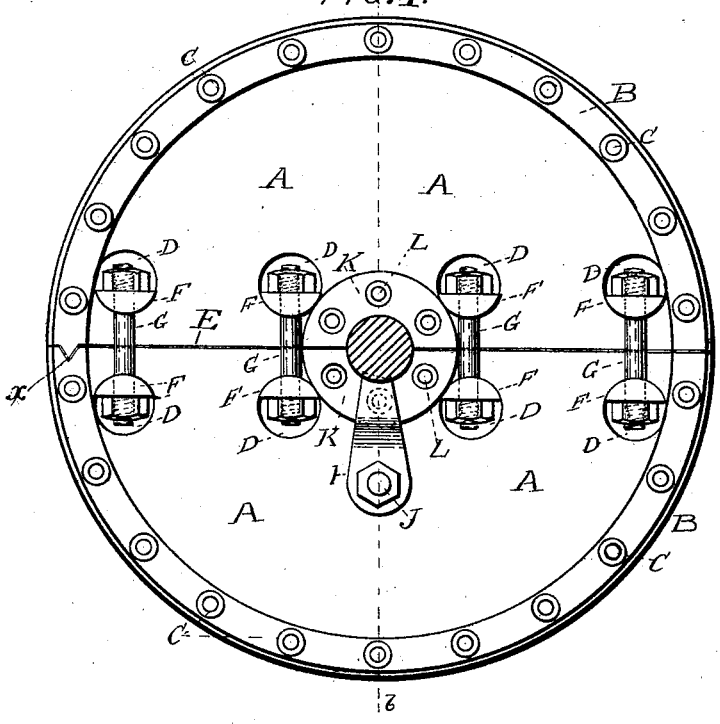
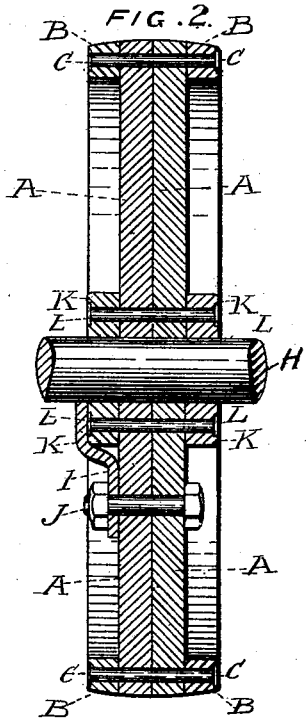


FIG. 2.



WITNESSES

Harry A. Brooks

A. W. Fairbanks

INVENTOR

James Raper Thame

BY

Edwin John Day.

ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES RAPER THAME, OF HOLCOMB VALLEY, CALIFORNIA.

FIBER PULLEY.

SPECIFICATION forming part of Letters Patent No. 643,782, dated February 20, 1900.

Application filed April 23, 1896. Renewed August 8, 1899. Serial No. 726,598. (No model.)

To all whom it may concern:

Be it known that I, JAMES RAPER THAME, a subject of the Queen of Great Britain and Ireland, and a resident of Holcomb Valley, in the county of San Bernardino and State of California, have invented certain new and useful Improvements in Fiber Pulleys; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the annexed drawings.

My improved pulley is composed of heavily-compressed fibrous material. The fiber which I use may be the fiber of wood, bamboo, or similar material, which is treated, as hereinafter described, so as to become elastic and at the same time sufficiently hard when put together in the condition hereinafter set forth to enable it to be worked by cutting-tools in a manner similar to the cutting of metal in a lathe.

I form the fibrous material into disks and rings by compressing it in molds of the requisite shape and dimensions or cut them from sheets of millboard of the requisite thickness. These disks and rings I then soak in a bath of drying resin-oil mixed with from twenty-five to fifty per cent. of colophony or other gum soluble in the said resin-oil. The compressed fibrous disks and rings are kept in this bath, which is maintained at a temperature of about 200° Fahrenheit, until the liquid has thoroughly saturated the fibrous material. The time necessary for this saturation to take place varies with the degree of compression and the nature of the raw fibrous material from which the disks or rings are made. After the disks or rings have been treated with the aforesaid liquid it is preferable to keep them at a temperature from about 100° to 140° Fahrenheit for a few days, this being arranged by placing them in a closed stove or chamber wherein this temperature is kept up, after which the disks and rings are removed from the said stove or chamber and then allowed to harden in the open air. In building up a pulley from these rings and disks I cement them together with shellac cement, as hereinafter more fully set forth.

Upon the annexed drawings, Figure 1 is an end elevation of a pulley constructed according to my said invention. Fig. 2 is a vertical section of the same on the line *b b*, Fig. 1.

In constructing a pulley such as that shown at Figs. 1 and 2 I cement the two disks A A together, as shown, with shellac cement. I next cement the two rings B B in the same manner onto the other faces of the disks A A. In practice the rings and disks constructed as hereinbefore described are usually from one-half to three-fourths of an inch or even one inch in thickness, according to the width of the pulley and the intensity or stress of the work intended to be done by the same, and where the work is unusually heavy I make the disks of even greater thickness. After having cemented the disks and rings together, as hereinbefore described, I then drill a series of holes to receive the rivets C all around the pulley, and which holes pass completely through the rings and disks of which the pulley is composed. The pitch of the said holes may vary from two to four inches or more, according to the diameter of the pulley and according to the extent of work or stress which the said pulley has to transmit. After said holes are drilled I insert into each a metallic round bar, one of which is passed through each of said holes and a washer placed over the same at the outer ends thereof. The outer ends are then riveted, as shown in the drawings, thus holding the rings and disks fast together. By this means I insure that the component parts of the pulley cannot come asunder. After the parts of the pulley have been thus put together each pulley of this form is next clamped to the face-plate of a lathe or the table of a boring-machine and the central hole is bored to the finished standard size. The pulley next has holes D bored through the disks, whose centers are on lines extending radially from the center of the shaft on which the pulley is to be fixed. The pulley is sawed in two halves by a band-saw, as indicated by the lines E E, and then these two halves are clamped on a shaft or mandrel, so that the pulley can be again put into a lathe or other turning-machine. The clamping device which I preferably use in connection with my present invention consists of pieces of semicircular iron F, Figs. 1 and 2, which pieces of semi-

circular iron have a hole through each end thereof and pass through the holes D in the disks of the pulley. Through the holes in the ends of the semicircular pieces of iron F bolts G are placed, as shown in Fig. 1, and by tightening the nuts on these bolts the two halves of the pulleys are firmly clamped to the mandrel or driving-shaft H. After being thus tightened onto the mandrel or driving-shaft the pulley is turned up on its periphery, either "crowned" or left flat, as the necessity of the case may require. The sides of the rings B are then turned, and after receiving a coat of paint or varnish the pulley is ready for the market.

In cutting the pulley in half I either cut it straight through or I sometimes divert the band-saw so as to leave a triangular projection on one half, which fits into a corresponding triangular recess in the other half of the pulley, as shown by the dotted line X in Fig. 1, and I may do this at either one or both sides of the pulley.

In cases where the work to be performed by the pulley is exceptionally heavy or where there is any probability of the pulley slipping on the driving-shaft I employ an attachment I, Figs. 1 and 2, fixed to the pulley. This attachment consists of a steel pawl hung loosely on a bolt J, passing through the disks of the pulley and being pointed or formed with a sharp edge at its forward part, bearing against the shaft. It is thereby so arranged as to penetrate into the shaft in the direction of the said pulley's motion, thereby gripping more firmly onto the same.

Having now described my said invention and the best system, mode, or manner I am at present acquainted with of carrying the same into practical effect, I desire to observe in conclusion that what I consider to be novel and original, and therefore claim as the invention to be secured to me by Letters Patent, is as follows:

The process of constructing pulleys of ligneous fiber which consists in compressing the fiber into disks, rings or plates and saturating the same by being soaked in resin-oil having from twenty-five to fifty per cent. of colophony dissolved therein, the said disks, rings or plates after removal from the resinous liquid, being maintained at a temperature of not less than 100° Fahrenheit, and not more than 200° Fahrenheit, then cooled in the open air and cemented together by shellac cement, then riveted together by rivets passed through holes in the said cemented disks, rings or plates, all substantially as hereinbefore described and shown upon the annexed drawings.

Dated Los Angeles, California, November 7th, A. D. 1895.

JAMES RAPER THAME.

Witnesses:

ST. JOHN DAY,

H. S. ROLLINS.