(No Model.)

J. WILEY.

BAND PULLEY.

No. 382,448. Patented May 8, 1888.

Fig. 1.

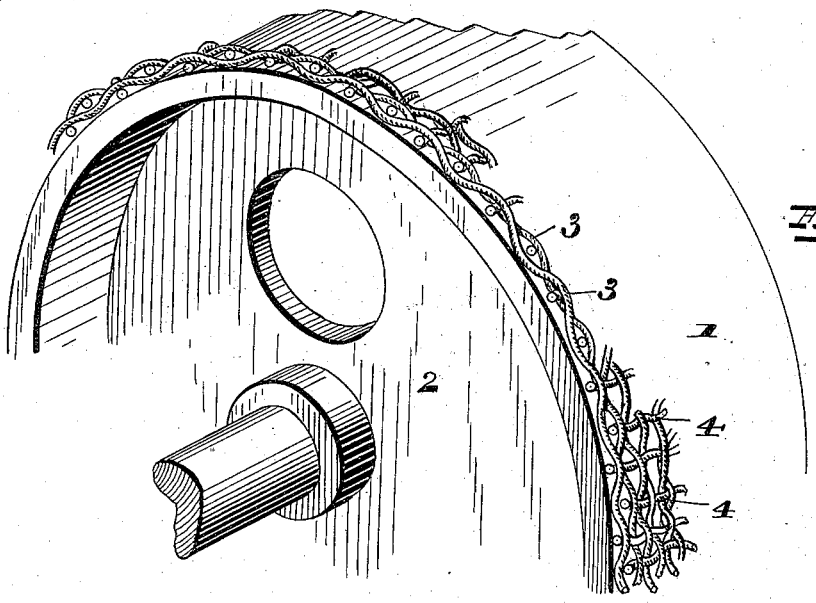


Fig. 2.

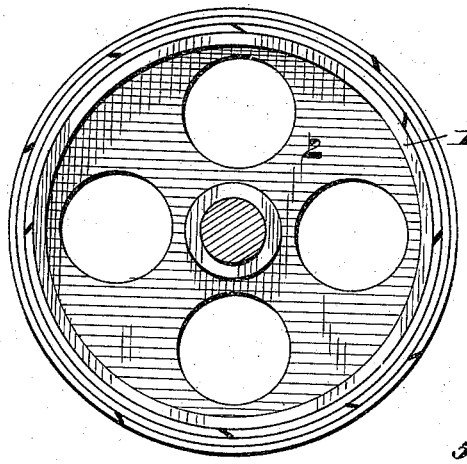
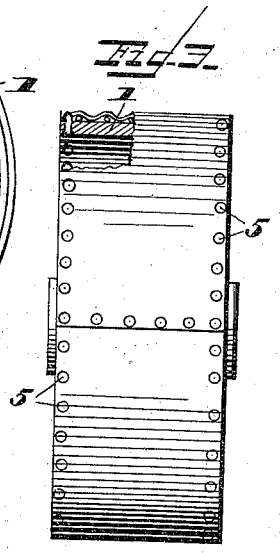


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN WILEY, OF FITCHBURG, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HAROLD B. EATON, OF SAME PLACE.

BAND-PULLEY.

SPECIFICATION forming part of Letters Patent No. 382,448, dated May 8, 1888.

Application filed January 12, 1888. Serial No. 260,511. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILEY, a citizen of the United States, residing at Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Band-Pulleys; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is an enlarged perspective view, partly in section, of a portion of the rim of a pulley provided with my improved canvas covering. Fig. 2 is a side view of a pulley provided with the covering; and Fig. 3 is a view of the face of a pulley, part being broken away, the rim of the pulley being provided with holes and the covering riveted and cemented thereto.

My invention has relation to that class of pulleys which are provided with a covering, and has for its object to produce such a pulley as cheap as possible; also, to make its surface better able to prevent the slipping of the belt and to cause it to retain its adhesive power as long as possible; and it consists in the improved construction of the same, as will be hereinafter more fully described, and pointed out in the claims.

One of the great disadvantages in using belting in machinery, and especially in doing heavy work, is the liability of the face of the pulley slipping under the belt or of the belt slipping over the face of the pulley. To overcome this difficulty many means have been resorted to, as covering the face of the pulley with a resinous substance, or with a smooth covering of some fibrous or similar material—as, for instance, paper or leather; but none of them have proved to be entirely practical or desirable. In the case of an iron-face pulley the smoother the face of the pulley the closer the hugging of the belt; but in the case of a canvas covering the air is excluded and the belt hugs the pulley tighter than it would a smooth surface.

From an inspection of Fig. 1 it will be seen that when the canvas has been applied to the face of the rim 1 of the pulley 2 the crossing of the threads of the warp 3 with those of the woof 4 produces a series of slight projections or nodules, and that they are all of exactly the same size and height. Hence there will be no one of them sticking farther out than the other to damage the belting. As the belt must necessarily be drawn over this covering very tightly to cause it to do any work at all, each of these little projections is forced against the interior of the inner surface of the belt with such power as to cause them to sink into it or to depress the inner surface of the belt, and thus prevent any slipping.

Another advantage that is possessed by the canvas is found in the construction of the threads of which it is composed. In twisting the fibers into the threads the ends of a great many of them are left projecting from the thread all along its entire length. As the threads are twisted very firmly, these short ends as they thus project will have considerable power to resist pressure upon them endwise, and of course will have a tendency to prick or stick into anything that is forced against them, and consequently will stick into the inner surface of the belt when it bears against them. In a piece of canvas, therefore, we find a series of small knobs or projections the surface of each of which is covered with a number of small sharp points sticking out from it, consisting of the ends of these fibers, which together act upon the belt by depressing its inner surface, and also pricking the same, preventing its slipping. As these projections are worn down by use, the different fibers are worn in two, and thus two ends are formed, which naturally will enter the belt in the same manner as the ends that projected from the threads of the canvas when first twisted. In this manner the utility of the covering is rather increased by use than otherwise and the adhesiveness of it is retained until the covering is entirely worn out.

It is obvious that to obtain the greatest benefit from this construction it is necessary that these projections should not be depressed and their efficacy destroyed by the great pressure upon them from the belt; but as the threads of canvas are spun or twisted very tight it is evident that where they are crossed it will be impossible to depress the outer one without

also depressing or compressing the under one, and as I secure the canvas directly to the solid outer face of the pulley it will be impossible for the under thread to sink into it; hence it is impossible for the outer ones to be depressed. In this manner I construct a pulley that will have a very great driving-power and one in which the covering will not be damaged to such a great extent by the drag of the belt, which has a constant tendency to retard the outer part of the covering, while the inner part of it, which is secured to the face of the pulley, is drawn in the opposite direction, and thus the particles of which the canvas is composed will be torn apart or separated.

A further advantage of my covering consists in the fact that the rough surface of the material affords a better means of gluing it to the surface of the pulley, as the interstices made by the woven thread form spaces into which the glue can enter, whereby a more effectual securing of the covering is attained.

In applying the canvas it is first torn across the cloth into strips of such length and width as that when put upon the face of the pulley it will take several of the strips to reach entirely around the pulley, and each strip will project a short distance beyond the edges of its rim. The strips are then coated with a suitable cement or paste and applied directly to the face of the pulley, the outer surface of the canvas being scraped smooth, which will remove all of the surplus cement, and will also cause it to bear very close to the pulley, owing to the subsequent shrinkage of the canvas as the cement dries or hardens. The succeeding strips are applied in like manner, the ends of the different strips overlapping sufficiently to make a neat lap-joint, although a butt-joint could be used, if desired. As the cement sets very quickly, a layer of canvas can be applied with but little trouble. If more than one layer or thickness of canvas is to be applied, the first layers are cemented upon both sides, and if the cement is not sufficiently set or hardened in the strips first applied by the time the entire circumference of the pulley has been covered the pulley can be set to one side until it is hardened, after which the succeeding layers are applied in the same manner as described for the first layer. In this way the face against which the lower side of the canvas rests is very hard and smooth, as the first layer rests against the face of the pulley and the succeeding ones against the outer surface of the canvas and cement, which, as above described, have been scraped until they are as smooth and hard almost as the face of the pulley itself. After the pulley has been thus covered with the canvas, the edges are trimmed off even with the edges of the pulley to make a neater piece of work, and also to prevent damage to the covering by having the edges beyond the edges of the pulley broken or torn off in handling or shipping.

As cloth is more easily torn crosswise than longitudinally, I have found it easier to apply canvas in strips, as above described. An additional advantage is found in the fact that if any of the threads or warps should become loosened or raveled it would only ravel to the end of that strip, whereas, if the layer was composed of a piece of canvas extending entirely around the face of the pulley it would ravel the entire distance, and the next thread the same way until the covering would be considerably damaged, if not entirely ruined. By using more than one layer of canvas the life of the covering is correspondingly increased, and at the same time all the advantages that are possessed by the single layer are retained in the additional layers.

If desired, the covering may be still further secured upon the pulley by means of bolts or rivets 5, which are passed through holes in the rim of the pulley, and also through the covering, a row of holes being preferably made across the pulley, as shown in Fig. 3, and an additional row around the rim or edges.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination, with a pulley, of a covering of canvas and cement secured thereto, each layer of the covering being composed of a series of strips the adjoining ends of which overlap each other transversely to the face of the pulley.

2. The combination, with a pulley the rim of which is provided with a transverse row of holes, and also a row of holes along each of its edges, of a covering of canvas and cement secured to the face of the pulley, and rivets through said holes and covering.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN WILEY.

Witnesses:
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