(No Model.) 2 Sheets—Sheet 1.

H. J. GILBERT.

SEPARABLE PULLEY.

No. 451,038. Patented Apr. 28, 1891.

Fig. 1.

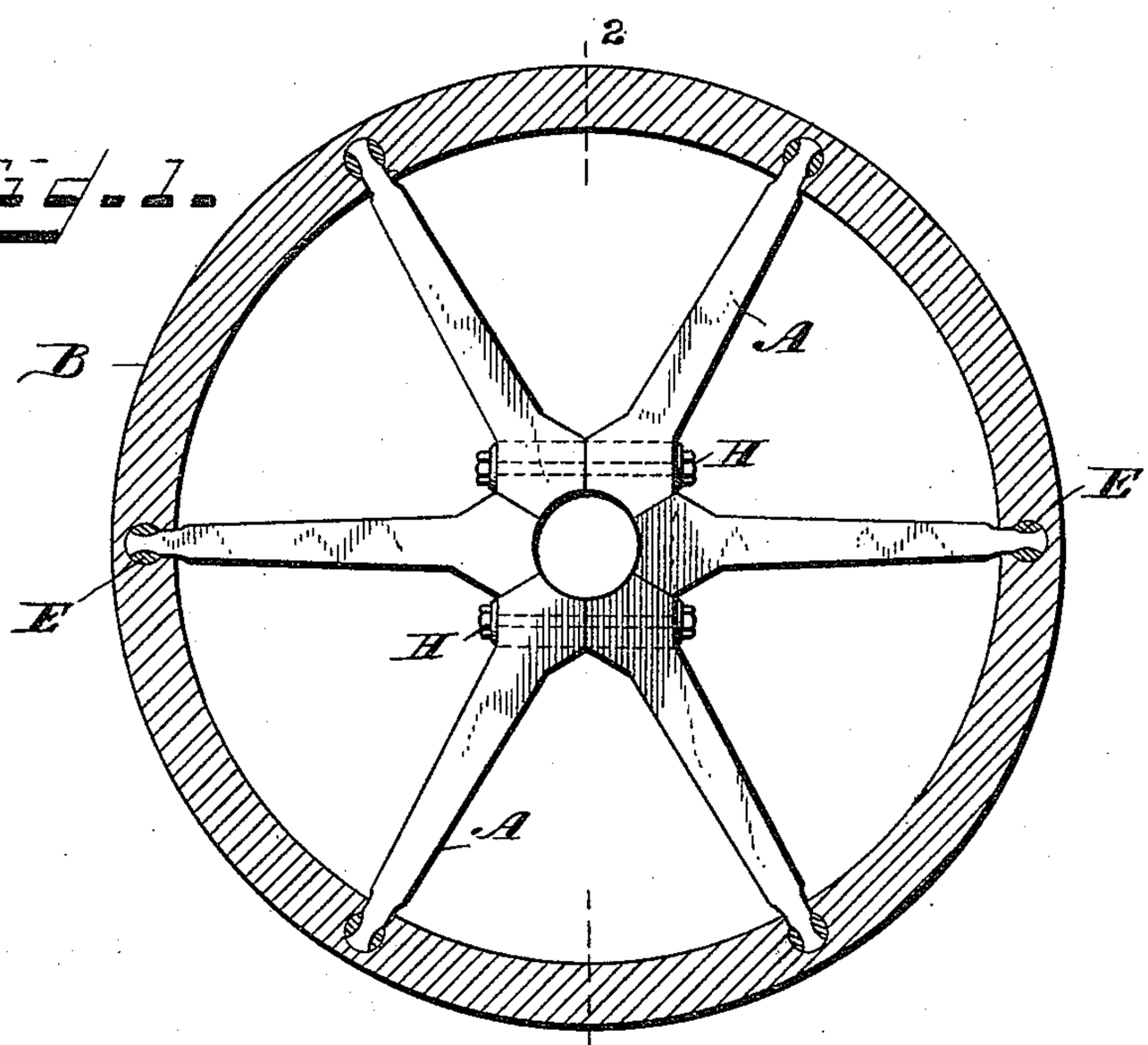


Fig. 2.

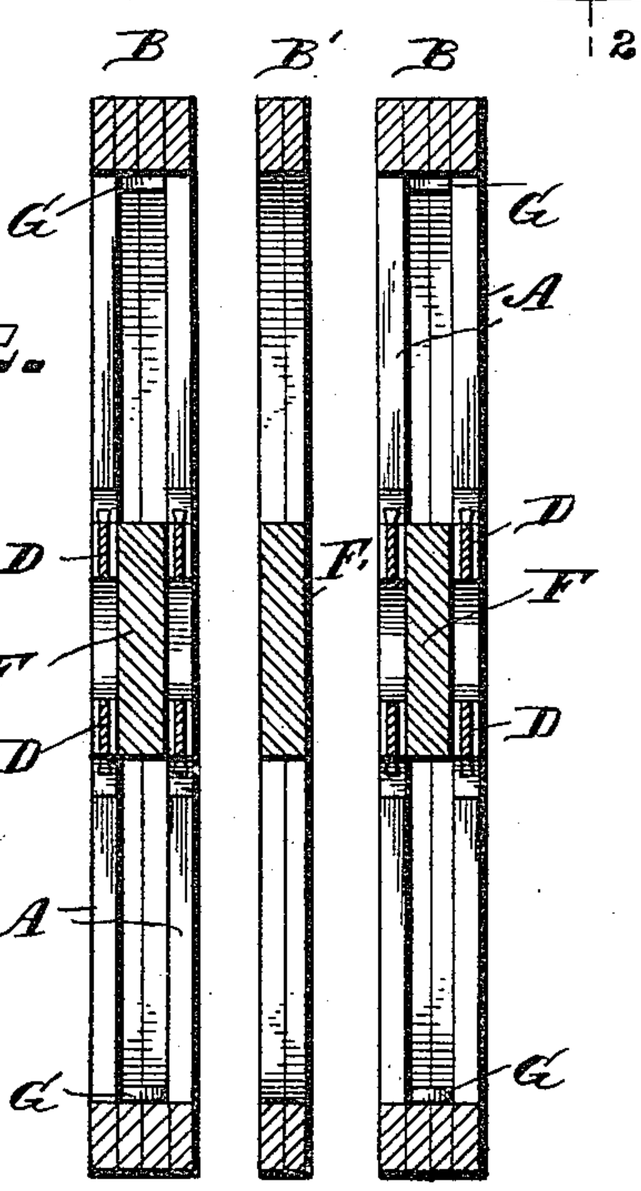
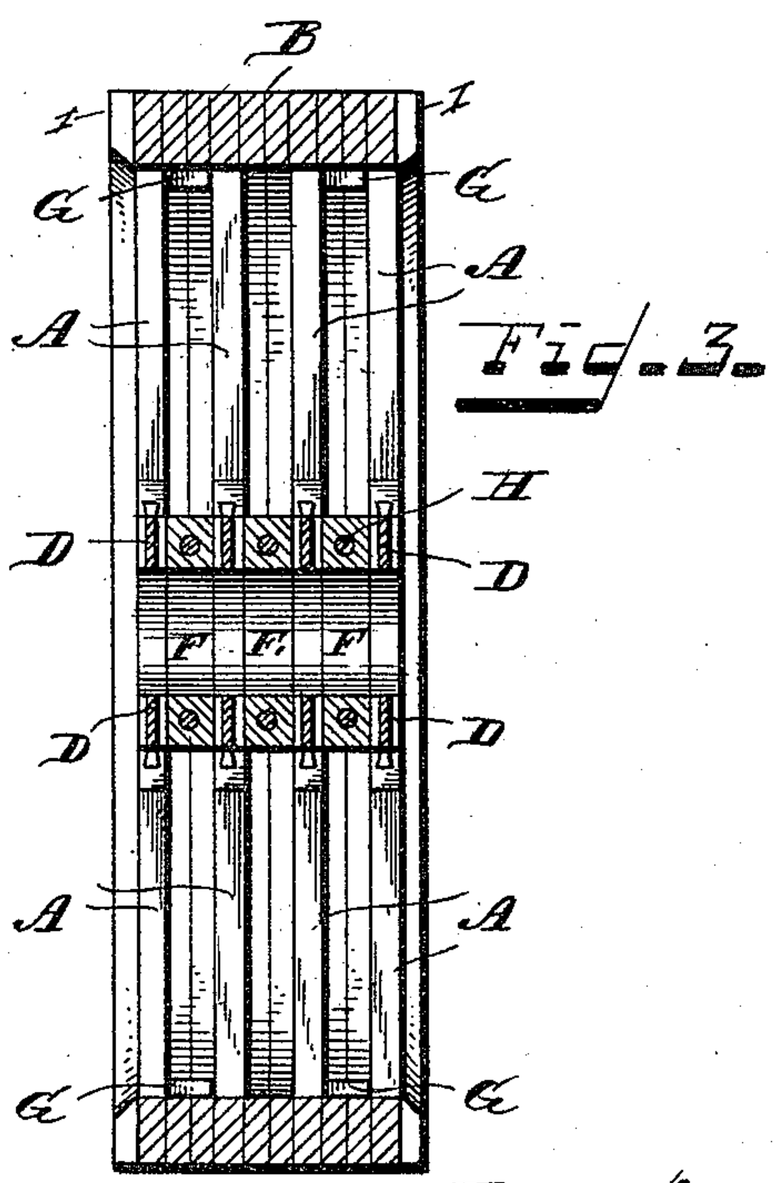


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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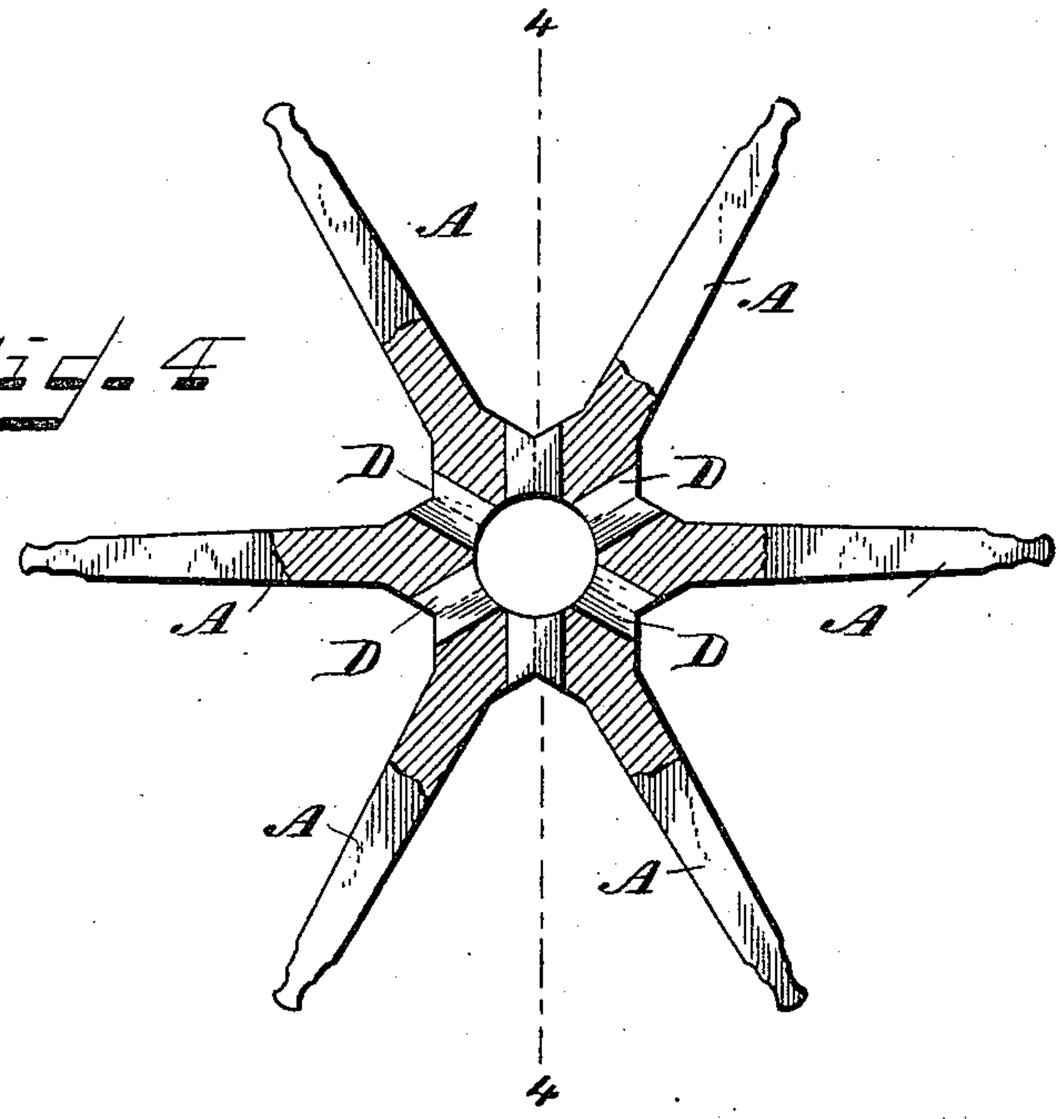
Fig. 4



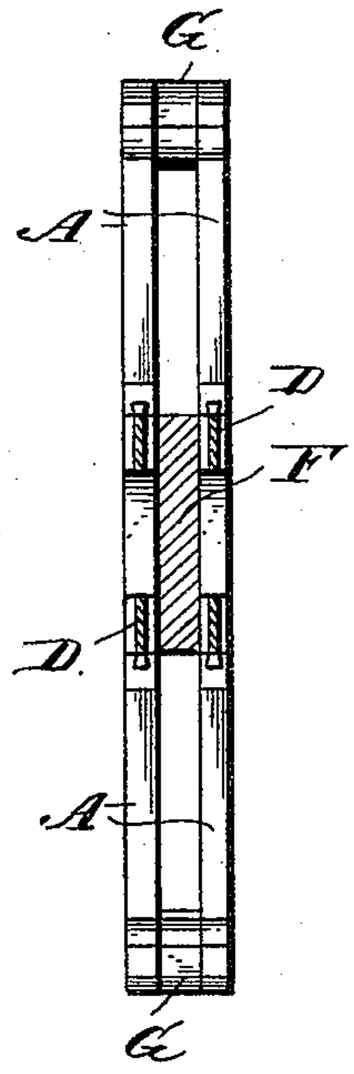


Fig. 4a

Fig. 5.

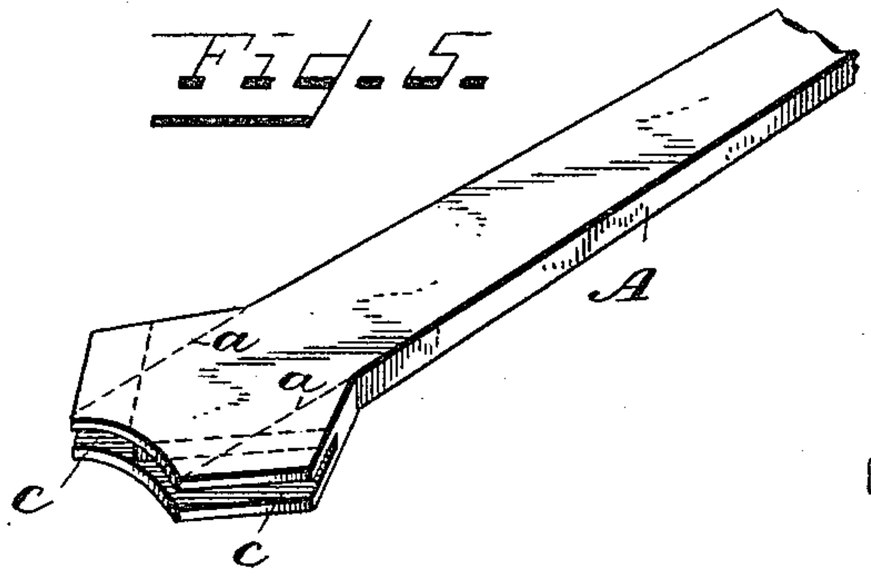


Fig. 6.

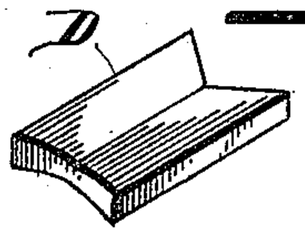
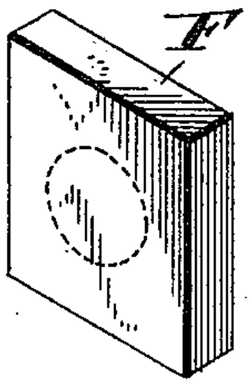


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY J. GILBERT, OF SAGINAW, MICHIGAN.

SEPARABLE PULLEY.

SPECIFICATION forming part of Letters Patent No. 451,038, dated April 28, 1891.

Application filed February 13, 1891. Serial No. 381,272. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. GILBERT, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Separable Pulleys and the Method of Constructing the Same, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to the pulley itself, whose particular novel construction enables it to be built more cheaply and be made of greater strength than has been usual heretofore, and also to a novel method of building up separable pulleys generally, whereby the manufacturer is enabled to carry in stock a supply of partly-constructed pulleys or pulley-sections from which he can quickly build up complete pulleys of varying widths of face, as ordered.

The novelty of my invention will be further set forth herein, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of a section of my improved pulley. Fig. 2 is a cross-section of two such sections before the hub-blocks are bored and the clamping-bolts applied on the line 2 2 of Fig. 1, with a section of rim and hub-block interposed between them; Fig. 3, a cross-section of a complete pulley built up of the parts shown in Fig. 2, with the covering-rings added to the sides of the rim. Fig. 4 is a side elevation of one set of spokes of my improved pulley with the hub portions of the spokes in section to show the dovetail keys by which they are locked together. Fig. 4^a is a cross-section corresponding to one of those in Fig. 2, but without the rim-section. Fig. 5 is an enlarged perspective of the hub portion of one of the spokes, showing the dovetail key-seats therein. Fig. 6 is a perspective of the dovetail-key, and Fig. 7 is a perspective of one of the hub-blocks.

The same letters of reference are used to indicate identical parts in all the figures.

Each section of the pulley, Fig. 1, is composed either of one or two sets of spokes or arms A, preferably two, and a rim-section B, into which they are fitted and secured. The butt-ends of the spokes of each set are suitably shaped to fit snugly against each other and form a hub-section, as shown. Their abutting faces have dovetailed key-seats C cut in them, as shown in Figs. 4 and 5. These seats are adapted to receive dovetail locking-keys D, an enlarged view of one of which is shown in Fig. 6. One of these keys is driven into the seats between each pair of spokes and firmly locks them together. The keys are preferably immersed in glue, and glue applied to the abutting faces of the spokes before the keys are driven in to increase the strength of the joint. When a set of spokes have been thus locked together, if the pulley-section is to contain only one set of spokes they are set into a rim-section B, built up of arc-shaped cants and provided with transverse bores and slots, Fig. 1, for the reception of the outer ends of the spokes. The tenons on the latter are so shaped as to be securely locked in the bores of the rim by the insertion of the oval locking-keys E. This method of locking the ends of the spokes to the rim, however, is not new, and any other suitable method may be employed.

From the pulley-sections, each composed of a single set of spokes and a rim-section, as above described, the complete pulley may be built up in the manner hereinafter set forth; but, as I prefer to form each section of two sets of spokes instead of one, I will first describe the method of building such a section.

The spokes of each set are first locked together at their butts, as shown in Fig. 4, but their outer ends are not tenoned. One set of spokes is then placed upon the other, with a rectangular block F (shown in dotted lines in Fig. 1 and in perspective in Fig. 7) between them, while between the adjacent faces of the outer ends of the spokes of each pair is placed a spacing or strengthening block G, Figs. 2, 3, and 4^a. The joints between the butts of the spokes and hub-blocks and between the outer ends of the spokes and the blocks G are glued, and in addition the spokes may be nailed or doweled to the blocks. When the two sets of spokes have been fastened together in this manner, the outer ends of the spokes, with the interposed blocks G, are tenoned to the shape shown in Fig. 4. The spokes are then ready to be applied to a rim-section in the same manner as the single set of spokes before described, the rim-sec-

tion being simply composed of more layers of cants to make its width correspond to the two sets of spokes instead of a single set.

From the pulley-sections above described, whether composed of one or two sets of spokes, the complete pulley is built up as follows: Between the hubs of each two sections is placed another hub-block F′, and between the two rim-sections a third rim-section B′, there being no spokes in this middle section and the hub-block F′ being in no way connected with the rim-section B′. The three sections are securely nailed or doweled and glued together to form the body of the complete pulley, after which it is sawed in two on the line 2 2 of Fig. 1 to separate it into halves. Holes are bored through the hub-blocks F F′ transversely to the line 2 2 for the reception of the bolts H, by which the two parts of the pulley are to be clamped together. The hub of the pulley is then bored out to the desired diameter, the inner ends of the spokes having been left rough and irregular up to this time. The covering or finishing rings I I are then applied to the opposite sides of the rim and the pulley is complete, as shown in Fig. 3. The ends of the divided covering-rings I I are made to overlap the lines of division of the rim of the pulley to hide the joints and prevent lateral displacement, as usual. The pulley is then turned in the usual manner.

From the above description it will be seen that in the completed pulley there is between the rims B B of each two adjacent sections of which the pulley is composed a rim-section B′, which has no spokes in it, and is therefore not weakened by having holes and slots in it, as have the portions of the rim which receive the spokes. It will also be understood that the bolts H for clamping the pulley together pass through the hub-blocks alone and not through the spokes, so that the latter are not weakened at their inner ends.

So far as the particular construction of my improved pulley is concerned, by locking together the butts of the spokes of each set with the dovetail keys and by securing the separate sets of spokes together with the interposed hub-blocks F and spacing-blocks G, I am enabled to use much lighter material for the spokes without lessening the strength of the pulley. I am also enabled to cut the spokes from thin lumber (thinner than indicated by the proportions of the drawings) and to set them edgewise in the pulley, which lessens the fanning action of the pulley, and thereby decreases the resistance offered by the air to its revolution.

By utilizing thin lumber for the spokes I am enabled to materially cheapen the construction of pulleys of this class. In actual practice I use "scrap" lumber for portions of the hub ends of the spokes. In such case the body of the spoke is made of nearly the same width from the inner end to the rim, tapering slightly, and the beveled side portions of the butts of the spokes are composed of separate pieces glued to the body of the spoke, as indicated by the dotted lines *a a* in Fig. 5.

The special advantage of building up the complete pulley from previously-constructed sections in the manner described is that it enables a manufacturer to keep on hand a stock which will meet the requirements of the trade with a much less investment of capital. Inasmuch as pulleys for different uses must vary greatly not only in diameter, but also in width of face, a manufacturer, in order to readily meet the demand for them, has heretofore been obliged to carry in stock not only a complete line of pulleys of all the different diameters usually called for, but also a complete line of such pulleys in all the different widths generally needed. My invention enables him to avoid the necessity of carrying a stock of pulleys of different widths, for by having on hand a complete stock of the pulley-sections of the same width but of different diameters he can upon receipt of an order quickly build up a supply of pulleys of any desired width. This enables him to carry a stock which will meet the requirements of the trade with about one-half the capital which has heretofore been necessary.

So far as concerns my novel method of building up complete pulleys of different widths from previously-constructed pulley-sections, my invention is not limited to the particular construction of such sections, either as the manner of securing together the spokes of each set or otherwise, but contemplates a method as broad as the terms of my respective claims imply.

Having thus fully described my invention, I claim—

1. The herein-described pulley-section, composed of two sets of spokes A, the spokes of each set having their recessed butts locked together by dovetail keys D, the hub-block F, interposed between the hub portions of the two sets of spokes, and the rim-section B, in which the outer ends of the spokes are secured.

2. The herein-described pulley-section, composed of two sets of spokes A, the spokes of each set having their recessed butts locked together by dovetail keys D, the hub-block F, interposed between the hub portions of the two sets of spokes, and the blocks G, interposed between the outer ends of the spokes of each pair, and the rim-section B, in which the outer ends of the spokes are secured.

3. The herein-described method of constructing pulleys of different widths, consisting in first forming pulley-sections, each composed of a set of arms or spokes and a rim-section, and then securing two or more of said sections together with an interposed hub-block and rim-section to form the complete pulley of the desired width.

4. The herein-described method of constructing pulleys of different widths, consisting in first forming pulley-sections, each com-

posed of a rim-section and a set of spokes dovetailed together at their butt-ends, and then securing said sections together with interposed hub-blocks and rim-sections to form the complete pulley of the desired width.

5. The herein-described method of constructing pulleys of different widths, consisting in first forming pulley-sections, each composed of a rim-section and two sets of spokes, the two sets of spokes being secured together at their butt-ends with an interposed hub-block, and then securing said sections together with other interposed hub-blocks and rim-sections to form the complete pulley of the desired width.

6. The herein-described method of constructing pulleys of different widths, consisting in first forming pulley-sections, each composed of a rim-section and two sets of spokes, the spokes of each set being dovetailed together at their butt-ends, and the two sets being secured together with a hub-block interposed between their hub portions and with spacing-blocks between the outer ends of the spokes, and then securing said sections together with other interposed hub-blocks and rim-sections to form the complete pulley of the desired width.

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