

H. J. GILBERT.

PULLEY.

APPLICATION FILED APR. 7, 1904.

1,026,797.

Patented May 21, 1912.

3 SHEETS-SHEET 1.

Fig. 1.

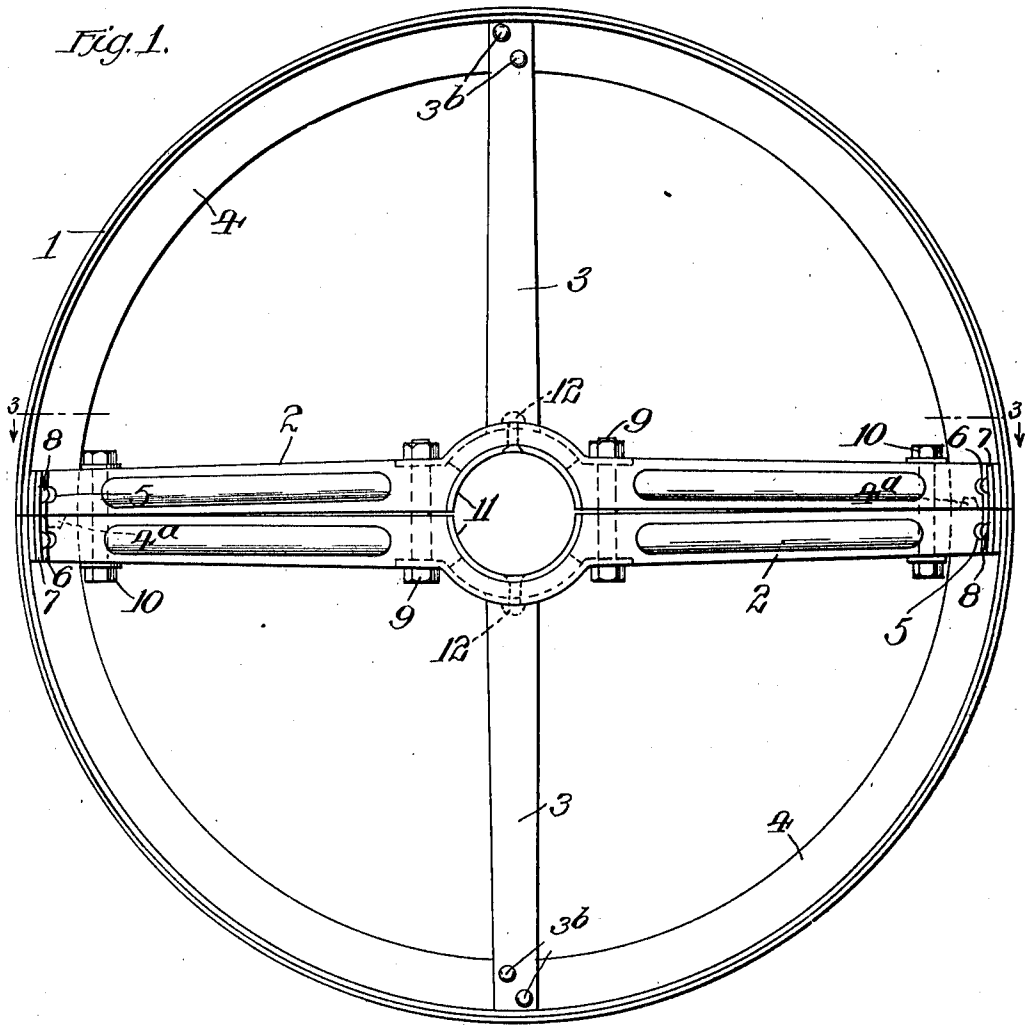
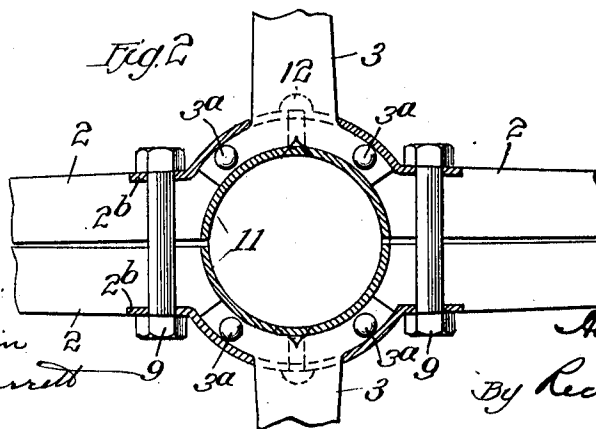


Fig. 2.



Witnesses:

L. B. Erwin

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Inventor:

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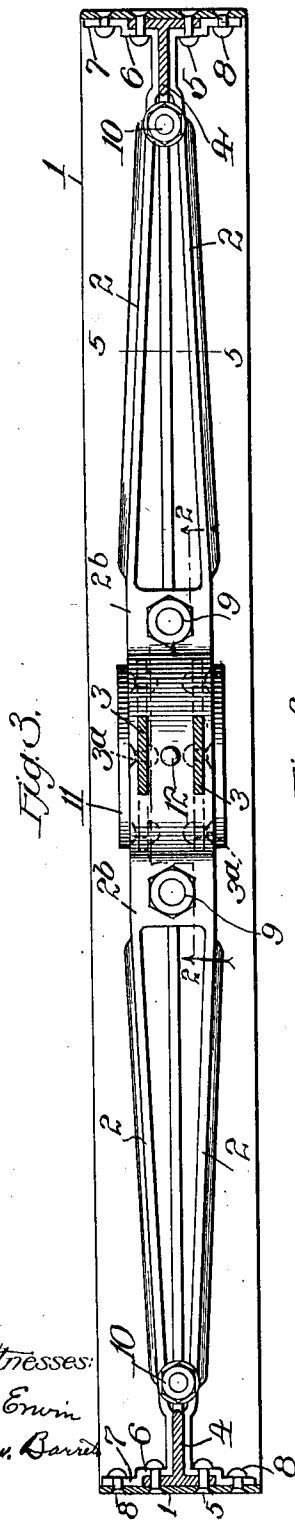
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3 SHEETS-SHEET 2.



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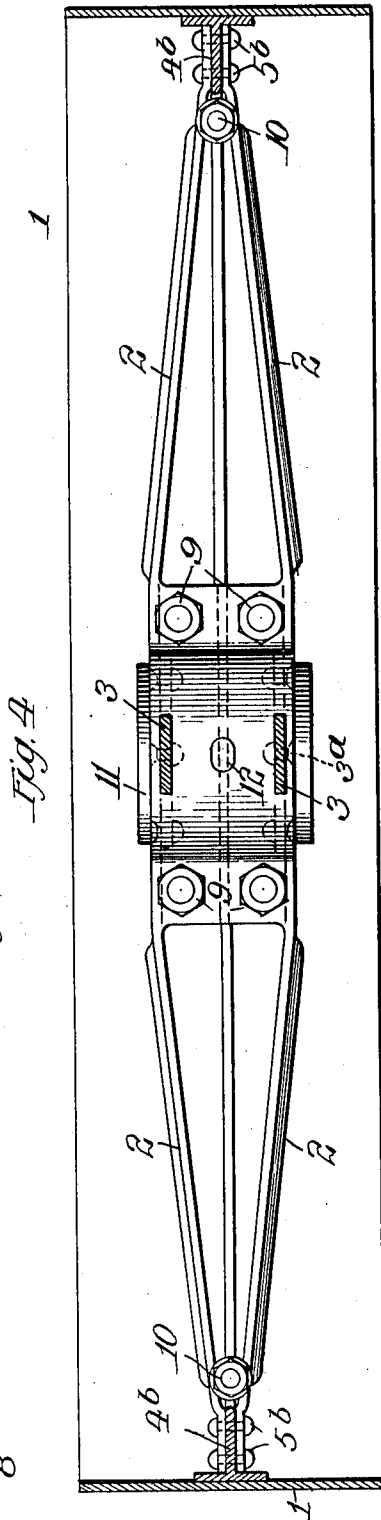


Fig. 5

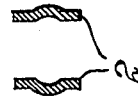
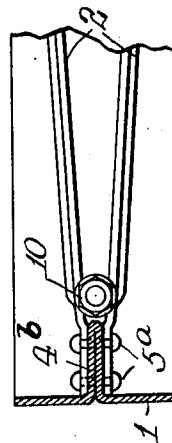


Fig. 6



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H. J. GILBERT.

PULLEY.

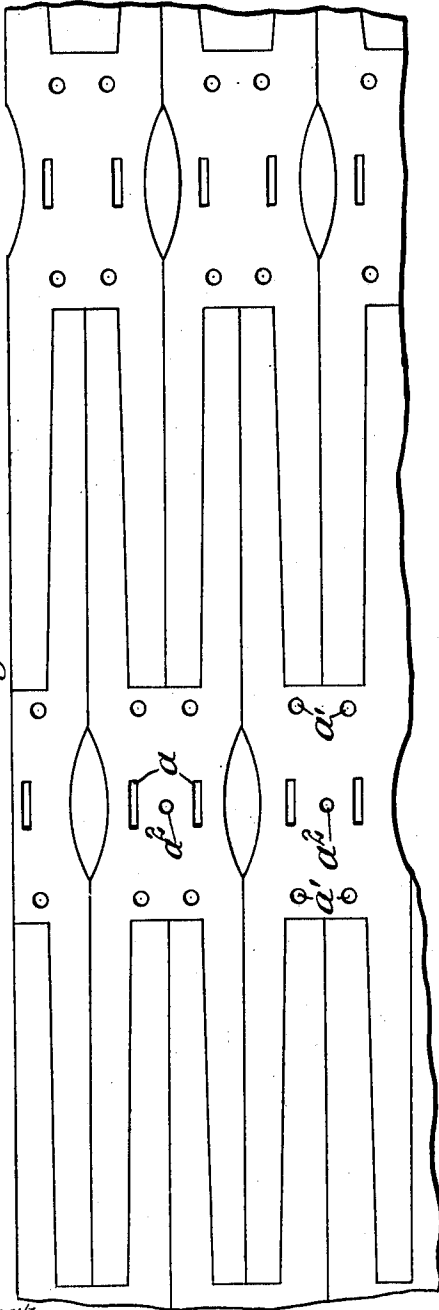
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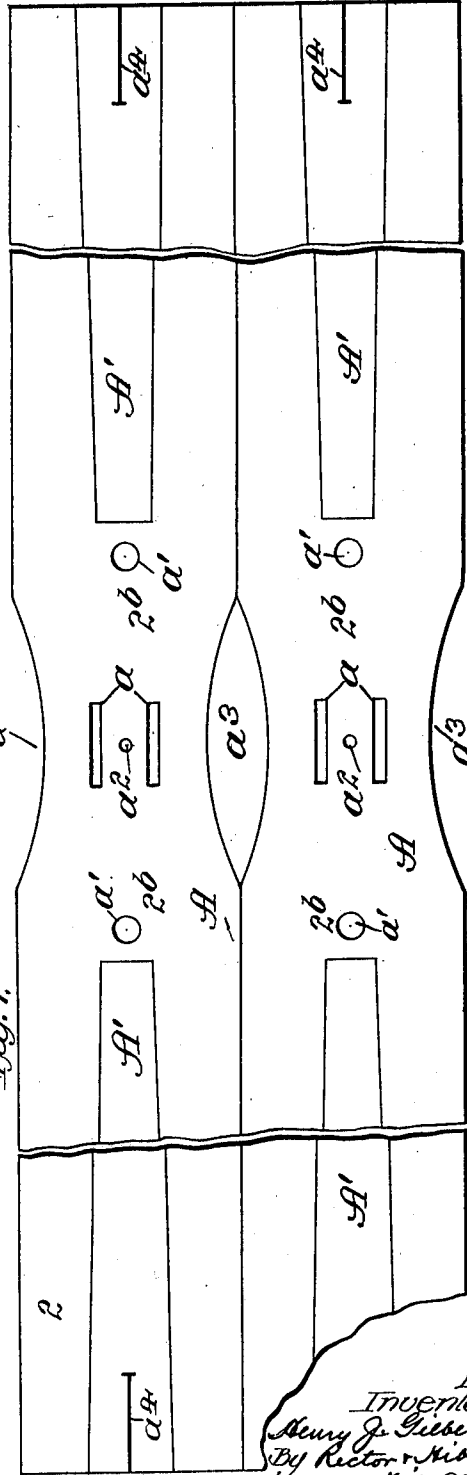
3 SHEETS-SHEET 3.

Fig. 6.



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Fig. 7.



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UNITED STATES PATENT OFFICE.

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PULLEY.

1,026,797.

Specification of Letters Patent.

Patented May 21, 1912.

Application filed April 7, 1904. Serial No. 202,050.

To all whom it may concern:

Be it known that I, HENRY J. GILBERT, a citizen of the United States, residing at Saginaw, Saginaw county, Michigan, have
5 invented certain new and useful Improvements in Pulleys, of which the following is a specification.

My invention relates to pulleys, more particularly those of the split type, and the
10 object thereof is to produce, from sheet metal, pulleys of simple, efficient and durable construction, as will be apparent from the description hereinafter given.

In the drawings, Figure 1 is a side elevation of my pulley; Fig. 2 a section of the
15 hub portion taken on line 2—2 of Fig. 3; Fig. 3 an enlarged sectional plan on line 3—3 of Fig. 1; Fig. 4 a view similar to Fig. 3 and illustrating a wider spoke structure; Fig. 5 a section on line 5—5 of Fig. 3 illustrating the preferable rib-construction of
20 spoke arm; Fig. 6 a detail view showing a modified form of web on the rim, the same being an infolded portion of the rim itself; Fig. 7 a plan of two sheet-metal blanks from which the spoke arms of Fig. 3 are
25 made; and Fig. 8 a similar view of blanks from which the wider spoke arms of Fig. 4 are made.

Referring first to the pulley structure illustrated in Figs. 1, 2 and 3, the split type of pulley therein shown comprises essentially the two rim segments 1, the diametrically arranged main spokes and the supplemental spokes 3, connected to each other and to the rim in the novel and efficient manner hereinafter set forth. In practice, and by
30 preference, each of the main spokes is formed from a blank A (two of which are shown in Fig. 7), so cut and slotted that when folded the peculiar shaped spoke illustrated in Figs. 1, 2 and 3 is produced. As
35 indicated in Fig. 7, each blank has cut from opposite ends the two substantially rectangular pieces A' which after suitable shaping at the end, as hereinafter described, become the two supplemental spokes 3. The blank also has the two parallel slots a which
40 are longitudinal of the blank and adapted to receive the supplemental spokes as hereinafter made apparent. Two bolt holes a' and a rivet hole a² are stamped in each blank. When the blank is folded along the proper
45 lines and the middle portion is expanded, there results a spoke comprising a hub por-

tion substantially U-shaped in cross section and two pairs of substantially parallel radiating side bars or arms, 2, with flat web portions 2^b formed on each side of said hub
60 portion and containing the bolt holes a', already referred to. Said hub portions being thus U-shaped comprise parallel sides or flanges and connecting webs as clearly shown in the drawings. In order to permit the hub portion of the spoke structure to
65 be properly formed, the blank is cut away at its central opposite edges at a³ as shown in Fig. 7. By preference, the spoke arms or side bars are longitudinally ribbed to obtain strength and to this end such side
70 members are outwardly pressed along their middle line, at the proper stage in the process of formation of the spokes. The outer ends of the side bars or arms of the spokes are brought toward each other, and, according
75 to the construction shown in Fig. 3, the same are bent or shaped to accommodate the interior web on the rim segments. As illustrated in Fig. 3, this web 4 is made of T iron secured to the rim segment in suitable
80 manner, as by the rivets 5. The ends of the spoke arms are brought toward each other, as stated, and on opposite sides of the web 4, while their extreme ends are turned laterally and twice bent to form the two right
85 angled flange portions 6 and 7 fitting on the flange of the web and on the rim segment respectively. Each resulting spoke thus comprises a single integral hub portion and two pairs of radiating spoke arms.
90 These arms are consequently connected at their inner ends but unconnected along their length. The same rivets 5 which secure the web to the rim segment also serve to secure the flange portion 6 thereto, while the rivets
95 8 secure the extreme ends 7 to the rim segment. Bolts 9 passed through the bolt holes a' in the flat web-like parts 2^b on opposite sides of the hub portion, serve to clamp together two similar adjoining spokes
100 and to a shaft to which the pulley is to be applied, while the bolts 10 serve to clamp such spokes together toward their outer ends. These bolts 10 are dropped through
105 in the space between the side members of the spokes, and are arranged to bear on the edges thereof, as seen in Fig. 1. The meeting ends of the web 4 are interlocked by means of the tongues 4^a fitting into corresponding notches or recesses in the meet-
110

ing webs. The middle portion of the blank A is of such length as to form the hub and to leave sufficient material or space on either side to provide bearings or supports for the clamping bolts 9. As hereinbefore stated, and for the sake of economy in manufacture, the supplemental spokes 3 are stamped out of the same blank as the main spokes and composed of portions thereof which would otherwise be considered waste.

Referring to Fig. 7, one end of the strip A' is slotted centrally and longitudinally at a^4 and thereby bifurcated or divided at such end into two arms which are bent or spread in suitable manner so as to diverge laterally as seen in Fig. 2, with the result that a pair of these spokes, after being passed through the slots a of the main spokes fit as to their diverging ends against the inner surface of the hub. The inner diverging ends of these supplemental spokes are secured to the hub portions of the main spokes in suitable manner as by means of rivets 3^a, as more clearly indicated in Fig. 2. The outer ends of these supplemental spokes, as shown, are secured to the web 4 by rivets 3^b.

A hub thimble 11, made in two pieces, is arranged within the hub or shaft opening and by preference the same is secured to the spokes by rivets 12. The inner ends of the supplemental spokes are thus connected with the hub structure of the main spokes by being confined between such hub structure and the hub thimble.

An extremely economical and efficient pulley construction thus results from the formation and arrangement of the pulley as hereinbefore described, the spoke structure being stamped from sheet metal without waste of material and the resulting pulley structure being very durable and rigid.

Instead of being separate from the rim segments, the interior web may be formed integral therewith by infolding the sheet metal of such rim segments to form the web 4^b shown in Fig. 6, which also illustrates a modified form of construction in so far as the spoke structure is concerned. In this construction the lateral flanges 6 and 7 are dispensed with and the ends of the spokes are secured direct to the web by means of the rivets 5^a. In other respects the pulley is the same in construction as the one already described.

The parts comprising each half of the pulley may be assembled in any desired manner or sequence but, as will be observed, the supplementary spokes 3 must be passed through the slots a in the hub portions of the main spokes before the thimble 11 is secured in place, with the result that when the parts are properly assembled the bifurcated ends of the supplementary spoke arms will take their position between the hub portion

of the spoke arms and the sections or halves of the thimbles, as clearly indicated in Figs. 1 and 2. In assembling the two halves or sections of the pulley, such halves are brought together to the position indicated in Fig. 1 and the same are clamped together by means of the clamping bolts 9 and 10.

The main spokes may be made wider than those shown in Figs. 1, 2 and 3, especially for wider face pulleys such as illustrated in Fig. 4. The blank from which these wide spokes are cut is shown in Fig. 8, from an inspection of which it will be observed that a series of spokes, which dovetail into each other, may be economically cut from sheet metal, the substantially rectangular portions cut out from the ends of each spoke blank (instead of constituting the supplemental spokes) being, in fact, the spoke arms themselves of two adjacent spoke blanks. The blanks for these wider spokes, like the narrower spokes, are also provided with the slots a , rivet holes a^2 , and two pairs of clamping-bolt holes a' to receive the bolts 9. In this particular pulley structure, the spoke arms are riveted by rivets 5^b to the web 4^b of a T iron made similar to the T iron 4 of Fig. 3, for instance.

I claim:

1. A pulley comprising a rim, and spokes connected therewith, each spoke consisting of a hub portion substantially U-shape in cross section and pairs of radiating side bars or spoke arms connected with the rim, said arms being connected at their hub portion but separated along their length; substantially as described.

2. A pulley comprising a rim, and spokes connected therewith, each spoke consisting of a hub portion substantially U-shape in cross section and pairs of radiating side bars or spoke arms connected with the rim, said spokes being arranged parallel to each other and said arms being connected at their hub portion but separated along their length; substantially as described.

3. A pulley comprising a rim having an interior web, and spokes connected therewith, each spoke consisting of a hub portion substantially U-shape in cross section and pairs of radiating side bars or spoke arms secured to the web, said arms being connected at their middle or hub portion but separated along their length; substantially as described.

4. A pulley comprising a rim having an interior web, spokes connected therewith, each spoke consisting of a hub portion substantially U-shape in cross-section, and pairs of spoke arms extending from substantially the corners of said hub portion and secured to opposite sides of said interior web on the rim; substantially as described.

5. A pulley comprising a rim having an

interior web, spoke arms connected therewith, each spoke arm consisting of a hub portion substantially U-shape in cross section, and pairs of spoke arms extending from substantially the corners of said hub portion and secured to opposite sides of said interior web on the rim, clamping bolts passing through said spokes adjacent their hub portion, and a second set of clamping bolts passing between said spoke arms near their outer ends and bearing against their outer edges; substantially as described.

6. A pulley comprising a rim, main spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, and supplemental spokes passed through the hub portion of said main spokes and connected at their outer ends with the rim; substantially as described.

7. A pulley comprising a rim, main spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, and supplemental spokes passed through the hub portion of said main spokes and connected at their inner ends with said hub portion and at their outer ends with said rim; substantially as described.

8. A pulley comprising a rim, main spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, each hub portion having a slot or spoke opening, and supplemental spokes passed through said spoke openings and connected at their outer ends to the rim; substantially as described.

9. A pulley comprising a rim, main spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, each hub portion having a pair of parallel longitudinal slots or spoke openings, and supplemental spokes passed through said spoke openings and connected at their outer ends to the rim; substantially as described.

10. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a hub portion substantially U-shape in cross-section and radiating spoke arms connected with the rim and supplemental spokes passed through the hub portion of said spoke arms, such supplemental spokes being connected at their inner ends with the parallel sides or flanges of the said U-shaped hub portions and at their outer ends with the rim; substantially as described.

11. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a hub portion substantially U-shape in cross section and radiating spoke arms connected with the rim, said hub portions having their parallel sides or flanges inwardly directed and the connecting web portion provided with parallel slots or spoke openings, and supplemental spokes passed through said spoke openings, such supplemental spokes being connected at their inner ends with the

flanges of said hub portions and at their outer ends with the rim; substantially as described.

12. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, and supplemental spokes having bifurcated inner ends connected with said hub portions and outer ends connected with said rim; substantially as described.

13. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, and supplemental spokes passed through said hub portions and having bifurcated inner ends connected with said hub portions and outer ends connected with said rim; substantially as described.

14. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, and supplemental spokes passed through said hub portions and having bifurcated inner ends bearing against the inner surface of the said hub portions and connected therewith, the outer ends of said supplemental spokes being connected with said rim; substantially as described.

15. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, said hub portions being approximately U shape in cross-section with parallel sides or flanges and connecting web, and supplemental spokes passed through the web portion of said hub portions and having bifurcated inner ends connected with said flanges and outer ends connected with the rim; substantially as described.

16. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, a hub thimble arranged within the hub portions of the spokes, and supplemental spokes having bifurcated ends saddled upon said thimble and having their outer ends connected with the rim; substantially as described.

17. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a hub portion and radiating spoke arms, a hub thimble arranged within the hub portions of the spokes, and supplemental spokes passed through said hub portions and having bifurcated inner ends arranged in the space between the said hub portions and the thimble and connected at their inner ends with the former and at their outer ends with the rim; substantially as described.

18. A pulley comprising a rim having an interior web, spokes connected therewith, each spoke consisting of a hub portion substantially U-shape in cross-section and pairs of spoke arms extending from said hub portion and secured to opposite sides of said

interior web on the rim, said U-shaped hub portions consisting of parallel sides or flanges and connecting webs, a hub thimble arranged within said hub portions, and supplemental spokes passed through said webs and having bifurcated inner ends connected with said flanges, the outer ends of such supplemental spokes being connected with the rim; substantially as described.

10 19. A pulley comprising a rim having an interior web, spokes connected therewith, each spoke consisting of a hub portion substantially U-shape in cross-section, and pairs of spoke arms extending from said hub portion and secured to opposite sides of said interior web on the rim, said U-shaped hub portions consisting of parallel sides or flanges and connecting webs, a hub thimble arranged within said hub portions, and supplemental spokes arranged in pairs and passed through said webs, said latter spokes having bifurcated inner ends connected with said flanges, the outer ends of such supple-

mental spokes being connected with the rim; substantially as described. 25

20. A pulley comprising a rim having an interior web, and spokes each comprising an integral hub portion and radiating spoke arms bearing against opposite sides of said web and extended to fit against the rim, said ends of the spoke arms being separated from each other but connected with said rim; substantially as described. 30

21. A pulley comprising a rim, a T-iron secured to the inner face thereof, and spokes connected with the T-iron and rim, each spoke comprising a hub portion and radiating spoke arms having laterally extended and twice bent ends or flanges to fit against the T-iron and rim; substantially as described. 40

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."