

H. J. GILBERT.

PULLEY.

APPLICATION FILED APR. 7, 1904.

1,062,703.

Patented May 27, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

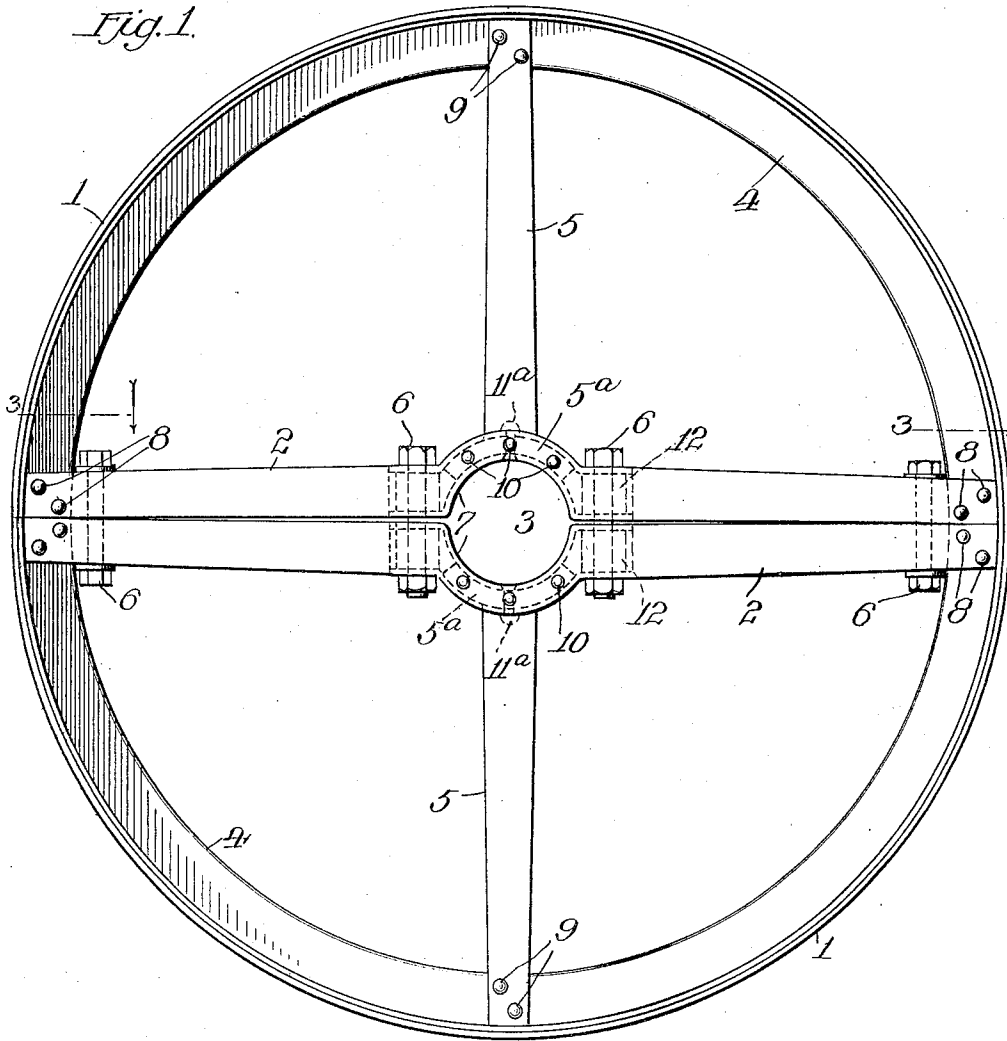
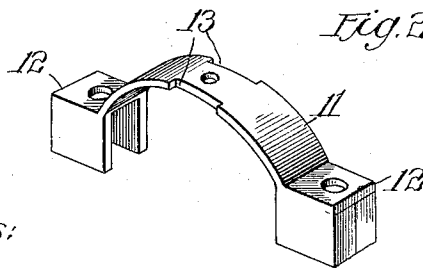


Fig. 2.



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3 SHEETS—SHEET 2.

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Fig. 3

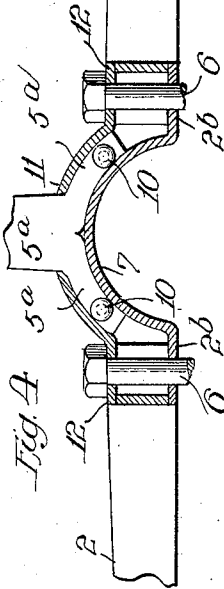
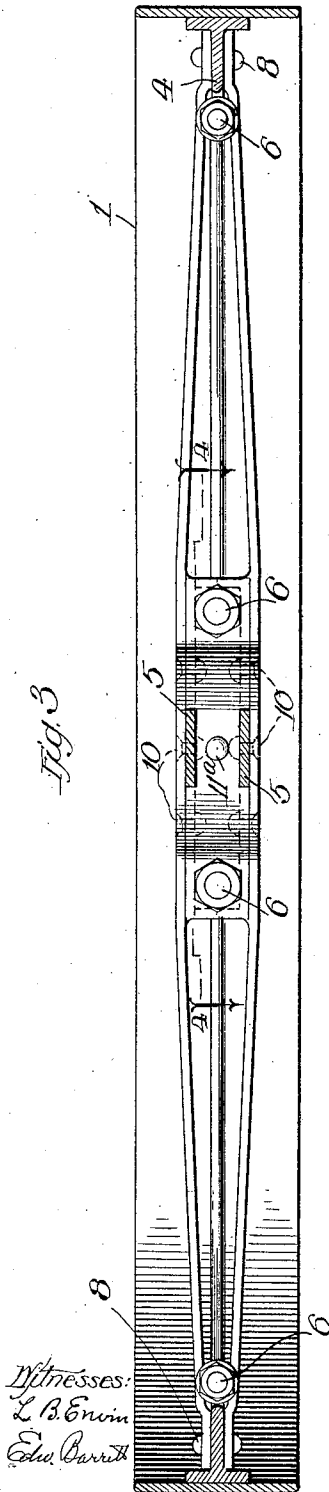
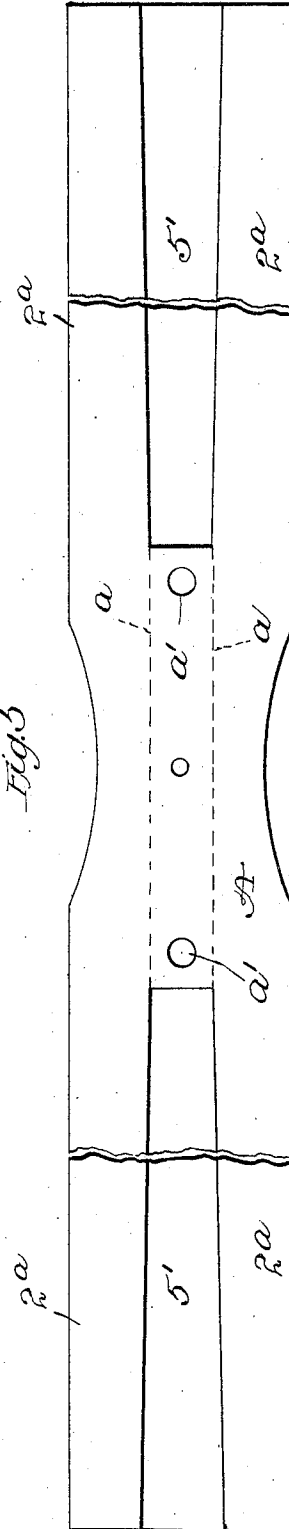


Fig. 4

Fig. 5



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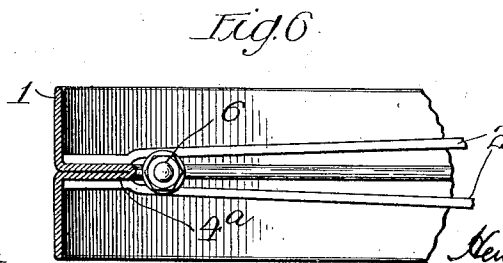
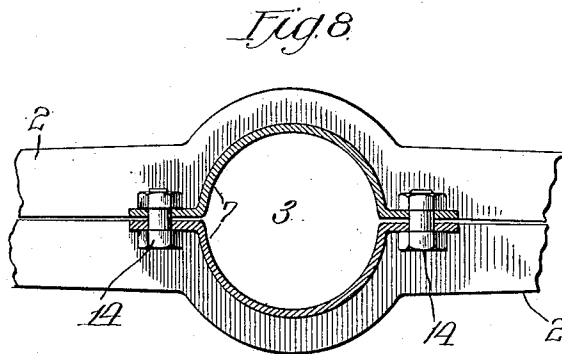
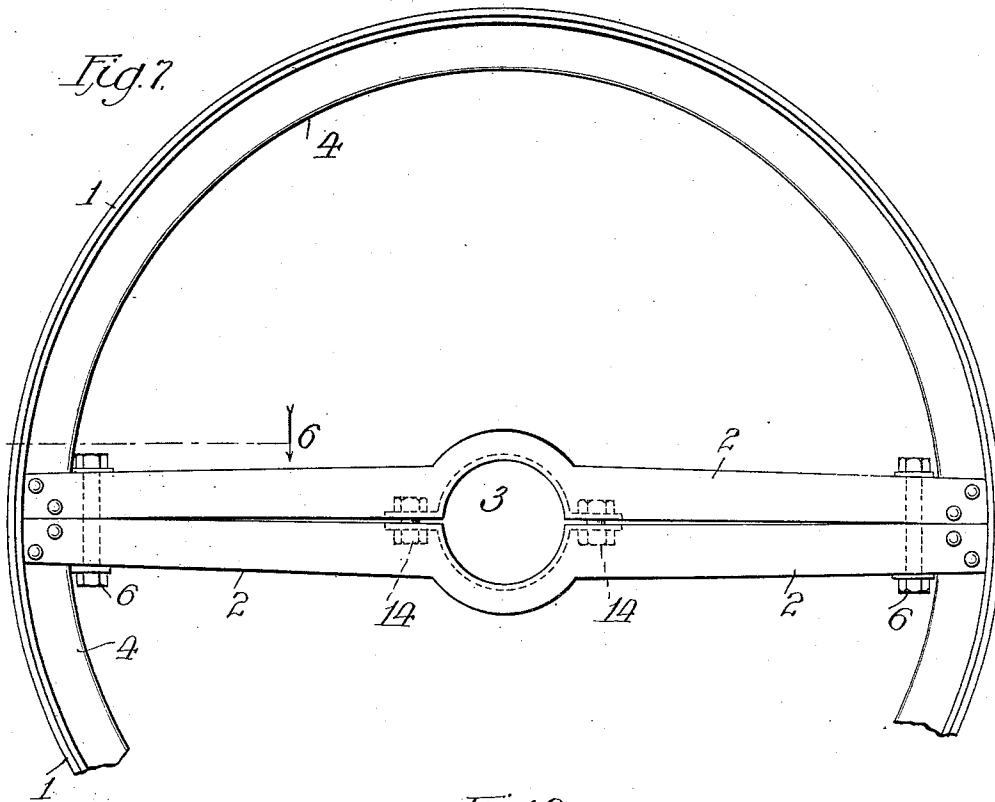
PULLEY.

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3 SHEETS-SHEET 3.

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UNITED STATES PATENT OFFICE.

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PULLEY.

1,062,703.

Specification of Letters Patent.

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To all whom it may concern:

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

My invention relates to pulleys and the object thereof is to produce, from sheet metal, a pulley which shall be comparatively simple and inexpensive of construction and at the same time possess all the necessary qualities of strength and rigidity.

In the drawings, Figure 1 is a side elevation of a pulley embodying my invention; Fig. 2 a perspective view of one of the bearing supports; Fig. 3 a sectional plan on line 3—3 of Fig. 1; Fig. 4 a sectional elevation on line 4—4 of Fig. 3; Fig. 5 a plan of a metal blank from which each spoke is made; Fig. 6 a detail view showing an infolded web on the rim; Fig. 7 a side elevation of a pulley illustrating a modified form of construction, and Fig. 8 a longitudinal section of the central portion of the spokes.

Referring first to Figs. 1 to 5, the pulley, which is here shown as made in two similar halves, comprises essentially the two rim segments 1 and the two spokes 2, which are expanded at their central portion to form the shaft bore or opening 3. In the present instance, the pulley is provided with an interior web formed by separate T-irons 4 secured in suitable manner to the rim segments, although such web may be otherwise constructed or arranged, as for instance by infolding the rim itself as seen at 4^a in Fig. 6. The pulley is also provided with supplemental spokes 5.

The spokes 2 which extend diametrically of the pulley structure are similar to each other in construction and formation and similar in the manner of attachment at their ends to the rim segments or the web thereof. In the present instance, each spoke is formed from a blank of sheet metal A (Fig. 5), from each end of which are cut the blanks 5' for the supplemental spokes 5 leaving the extending strips 2^a which are to form the side bars or strips of the spokes when the properly cut blank is folded as hereinafter explained.

In the formation of the spoke, the blank is upwardly curved to form the hub portion of the spoke constituting one-half of the shaft bore or opening with flat radial portions 2^b on either side, and also folded up-

wardly on the longitudinal lines *a*, with the result that a spoke as shown in Figs. 1, 3 and 4 is formed. The blank is also provided with holes *a'* to receive the inner set of clamping bolts 6, the other or outer set of clamping bolts being passed or dropped between the side bars or arms 2^a of the spokes at their outer ends, and bearing against the edges thereof as seen in Figs. 1 and 3. In this construction of spoke, the hub portion of each spoke comprises the half thimble-like portion 7 and the outwardly directed flat or flange portions which are extended from the hub portion and are continued to form the side bars or spoke arms proper. These side bars or spoke arms extend radially toward the rim, from the outer corners of such flat portions and are unconnected by any web because of the removal of material from the blank to form the supplemental spokes 5. The outer ends of the spokes 2 are secured to the web 4 in suitable manner, as by means of the rivets 8.

The supplemental spokes 5 are made from strips cut out from the sheet metal blank, in the manner already explained. They are substantially rectangular in shape and secured at their outer ends to the web of the rim segments by rivets 9, or otherwise. The inner ends of these supplemental spokes are longitudinally bent to form two diverging arms or branches 5^a which are made to conform to the contour of the hub portion 7 of the spokes so as to be saddled or fitted thereupon. These branch arms are secured to the flanges of the hub portion of the spokes by means of rivets 10.

In order to form hub supports for the clamping bolts 6, I shape up from a sheet metal blank the reinforcing member or hub support comprising the curved plate portion 11 and the end box portions 12, which latter are formed from the flanged and inturned portions of the metal blank, all as clearly shown in Fig. 2. Each spoke is provided with one of these hub supports, which is of a size and shape to fit between the flanges of the spoke, with its bearing boxes resting upon and supported by the web portion of such spoke on either side of the shaft bore thereof. The curved plate portion 11 of each hub support is concentric with the hub portion 7 of its spoke and is adapted to fit upon the outer edges of the branch arms 5^a of the supplemental spokes, as clearly indicated in Fig. 4. The bearing boxes 12 are

provided with bolt holes to receive the clamping bolts 6 which pass therethrough and through the spokes, whereby the spokes and hub supports are all clamped together, as seen in Fig. 1. The arched or curved plate portion 11 is notched on opposite sides at 13 in order to accommodate the pairs of supplemental spokes, and is preferably secured to the hub portion 7 by rivets 11^a.

In Figs. 7 and 8, I have illustrated a modified form of construction in which the hub supports as well as the supplemental spokes are entirely dispensed with, in which case the clamping bolts 14 are quite short, inasmuch as they bear directly upon the web portions of the spokes without the employment of the bearing boxes or supports. In other respects the pulley structure is the same as that of the other figures.

I claim:—

1. A pulley comprising a rim, and spokes connected therewith, each spoke being an integral structure comprising a central hub portion which has outwardly directed flanges projecting from its opposite side edges and radially extended from the outer portions of such hub to form spoke arms connected at their outer ends to the rim, and which has the two flat radial portions 2^b on each side of the hub portion, said spoke arms being separate and unconnected along their length and extending from the outer corners of said flat portions to the rim to form substantially diametrical spokes; substantially as described.

2. A pulley comprising a rim, and spokes connected therewith, each spoke being an integral structure comprising a central hub portion which has outwardly directed flanges projecting from its opposite side edges and radially extended from the outer portions of such hub to form spoke arms connected at their outer ends to the rim, and which also has the two flat radial portions 2^b on each side of the hub portion, said spoke arms being separate and unconnected along their length and extending from the outer corners of said flat portions to the rim, in combination with clamping bolts through the said portions 2^b for securing adjoining spokes together said spokes extending diametrically of the pulley structure; substantially as described.

3. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a central hub portion with outwardly directed flanges and radial spoke arms constituting a continuation of the flanges, supplemental spokes connected at their outer ends with the rim and having bifurcated inner ends fitting upon the hub portion of the spokes, hub supports inserted between said flanges of each of the first named spokes, and clamping bolts passed through the hub supports and said hub portions of

the first named spoke arms; substantially as described.

4. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a central hub portion with outwardly directed flanges and radial spoke arms constituting a continuation of the flanges, hub supports inserted between said flanges, supplemental spokes connected at their outer ends with the rim and having bifurcated inner ends fitting upon the hub portion of the spokes and secured to said flanges, and clamping bolts passed through the hub supports and the hub portions of the first named spokes; substantially as described.

5. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a central hub portion and radial spoke arms, hub supports arranged concentric with the hub portions of the spokes, and supplemental spokes connected at their outer ends with the rim and having their inner ends secured between the hub supports and the said hub portions of the first named spokes; substantially as described.

6. A pulley comprising a rim, spokes connected therewith, each spoke consisting of a central hub portion and radial spoke arms, hub supports arranged concentric with the said hub portions, and supplemental spokes connected at their outer ends with the rim and having their inner ends bifurcated and fitting within the space between the said hub portion of the spokes and the hub supports; substantially as described.

7. A pulley comprising a rim and spokes secured at their outer ends to said rim and extending substantially diametrically of the pulley, each spoke being formed as an integral structure comprising a central hub portion which has outwardly directed flanges projecting from its opposite side edges, such flanges being extended at both ends and radially in opposite directions to form spoke arms, said hub portion also having two flat radial portions on either side and at the inner ends of the members of each pair of spoke arms and in the same plane as the inner edges of such spoke arms; substantially as described.

8. A pulley comprising a rim, a T-iron secured to the inner face thereof, spokes secured at their outer ends to said T-iron, each spoke comprising a central hub portion and outwardly directed flanges and radial spoke arms, hub supports between the flanges of each spoke, supplemental spokes secured at their outer ends to the T-iron and having bifurcated inner ends fitting upon the hub portions of the spokes and secured to the flanges of said hub portions, and clamping bolts passed through the hub supports and the first named spokes; substantially as described.

9. A pulley comprising a rim, spokes con-

5 nected therewith, each spoke consisting of a central hub portion and radial spoke arms, hub supports arranged concentric with the hub portions of the spoke arms, supplemental spokes connected at their outer ends with the rim and having their inner ends bifurcated and saddled upon the hub portions of the first named spokes, and also fitting between their hub portions and said hub supports, and clamping bolts passed 10 through said hub supports and the first named spokes; substantially as described.

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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."