April 30, 1940. K. F. NYSTROM 2,198,787

PULLEY

Filed March 6, 1939 5 Sheets-Sheet 1

Fig. 2.

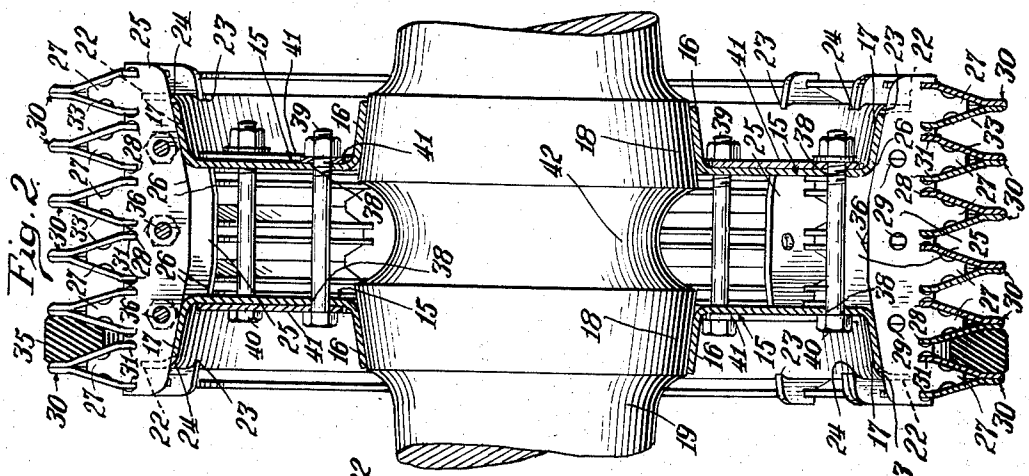
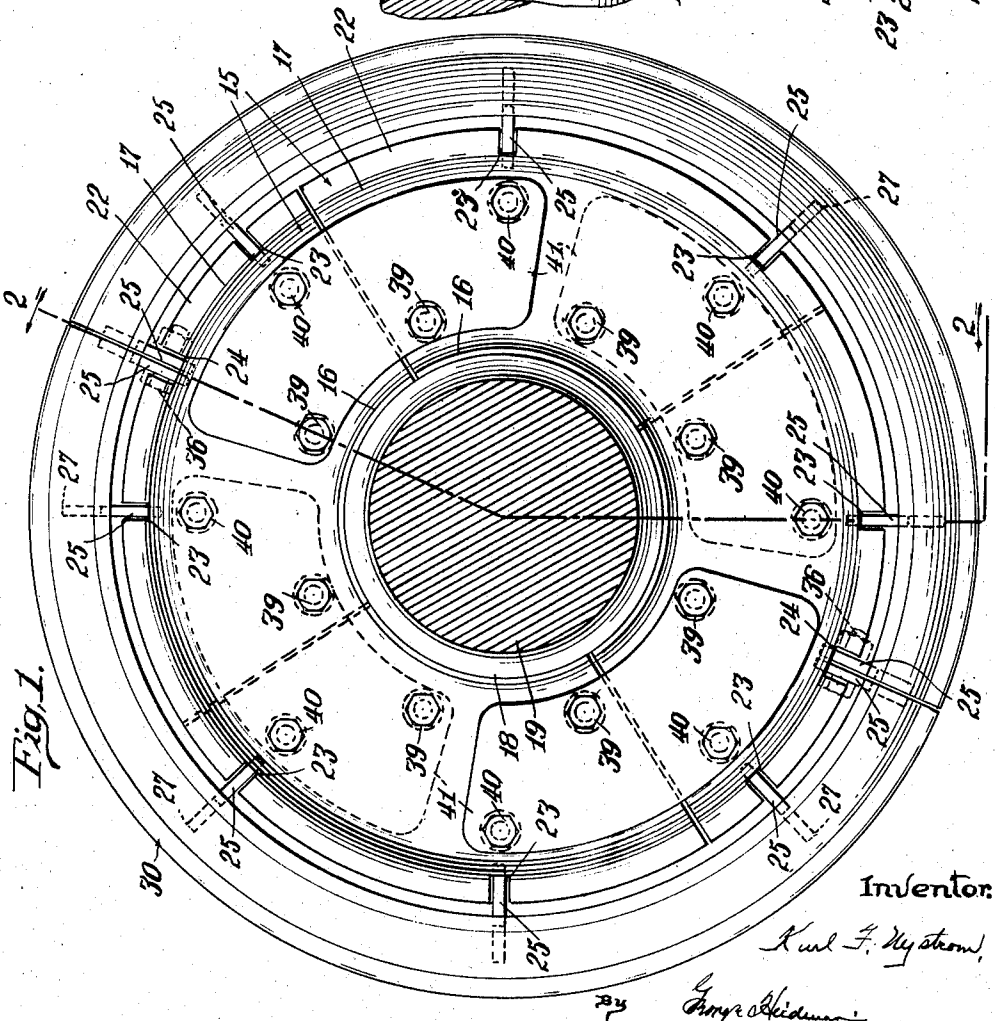


Fig. 1.



Inventor:
Karl F. Nystrom,
By George A. Heidemann
Attorney

April 30, 1940. K. F. NYSTROM 2,198,787

PULLEY

Filed March 6, 1939 5 Sheets-Sheet 2

Fig. 3.

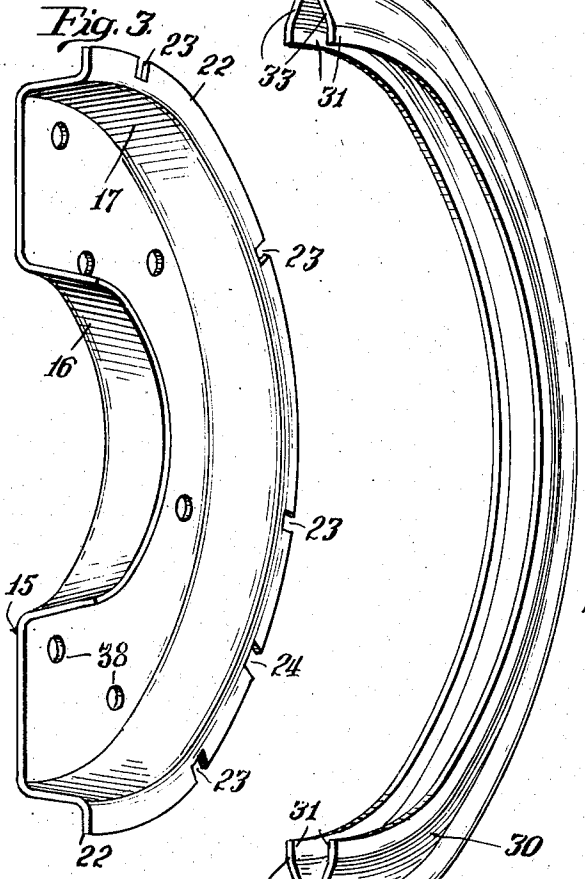


Fig. 4.

Fig. 6.

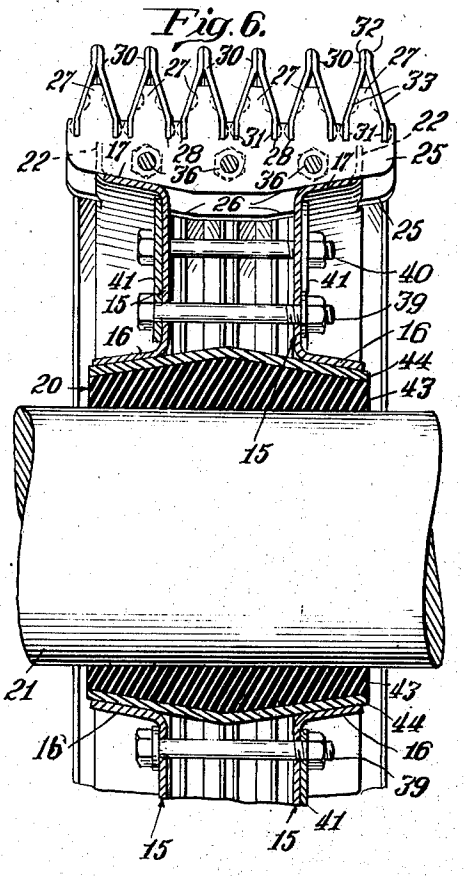
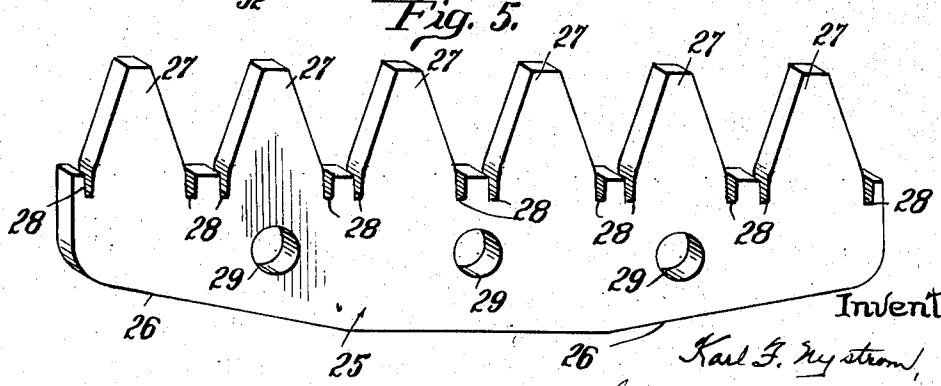


Fig. 5.



Inventor

Karl F. Nystrom

By George Heidemann

Attorney

April 30, 1940. K. F. NYSTROM 2,198,787

PULLEY

Filed March 6, 1939 5 Sheets-Sheet 3

Fig. 8.

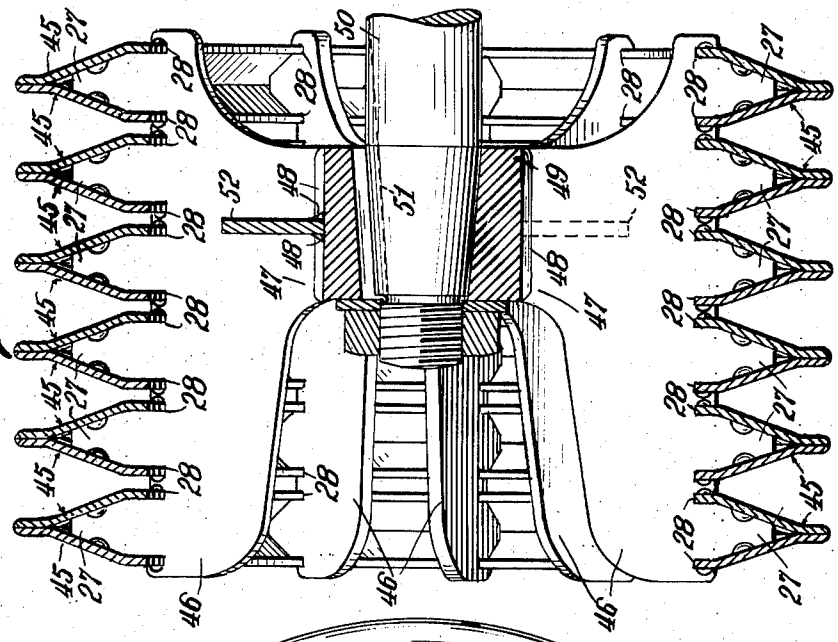
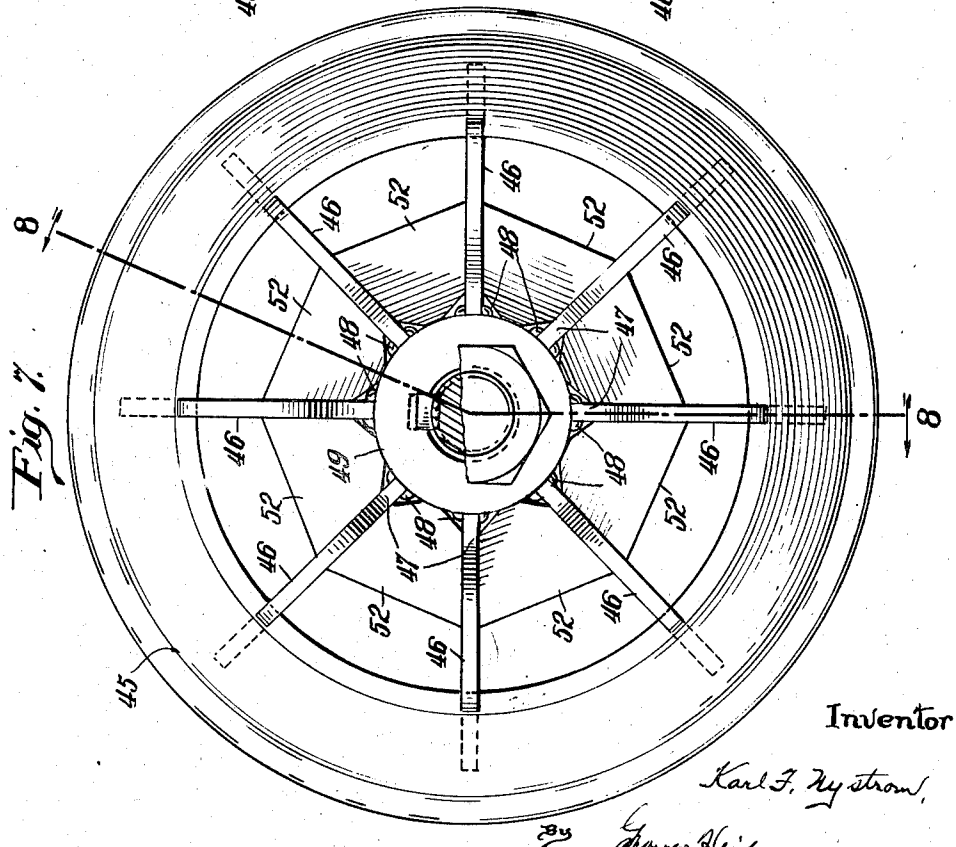


Fig. 7.



Inventor

Karl F. Nystrom,

By Thomas Hildreth

Attorney

April 30, 1940. K. F. NYSTROM 2,198,787

PULLEY

Filed March 6, 1939 5 Sheets-Sheet 4

Fig. 10.

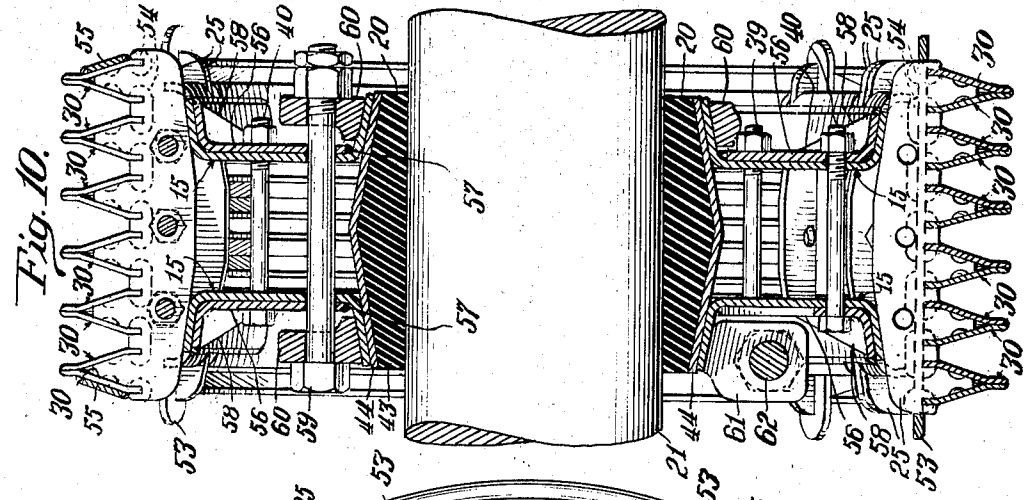
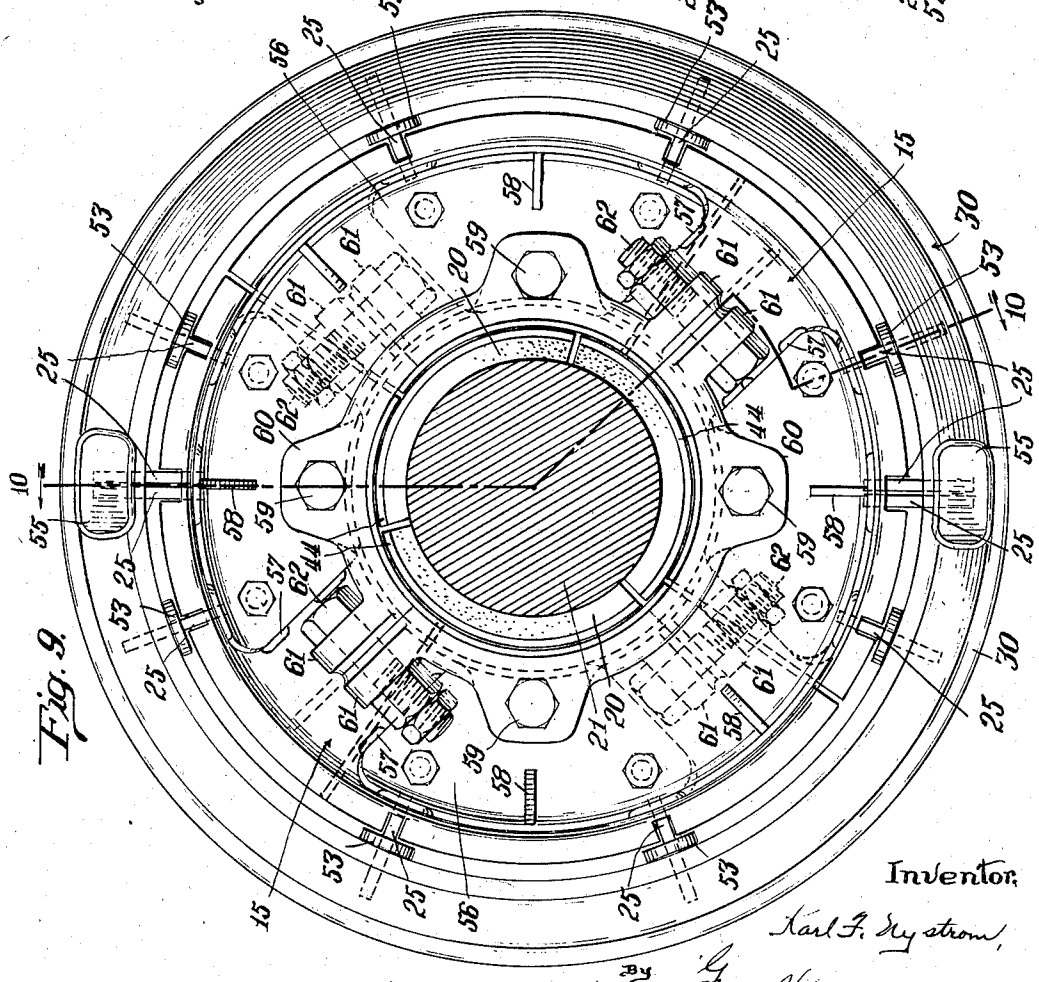


Fig. 9.



Inventor:
Karl F. Nystrom,
By George Heidner
Attorney.

April 30, 1940. K. F. NYSTROM 2,198,787

PULLEY

Filed March 6, 1939 5 Sheets-Sheet 5

Fig. 12.

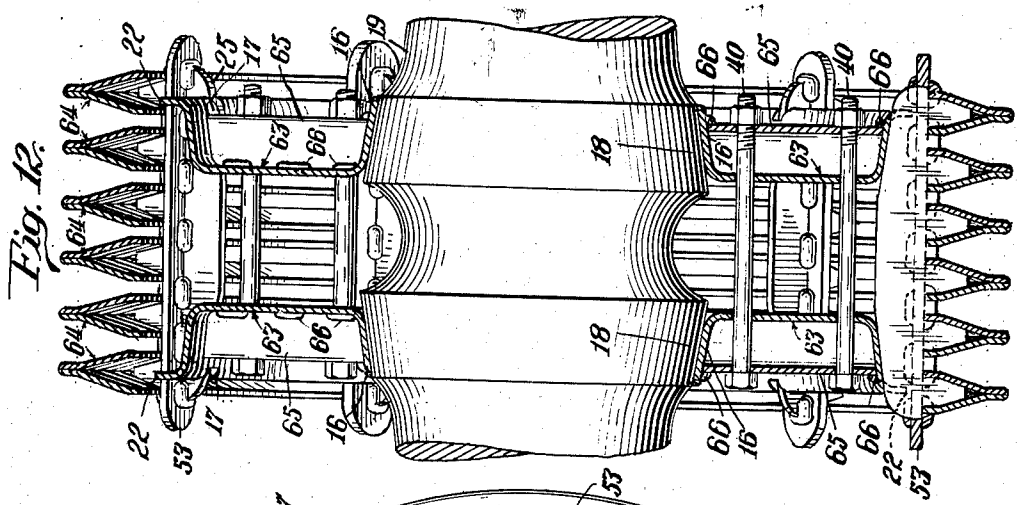
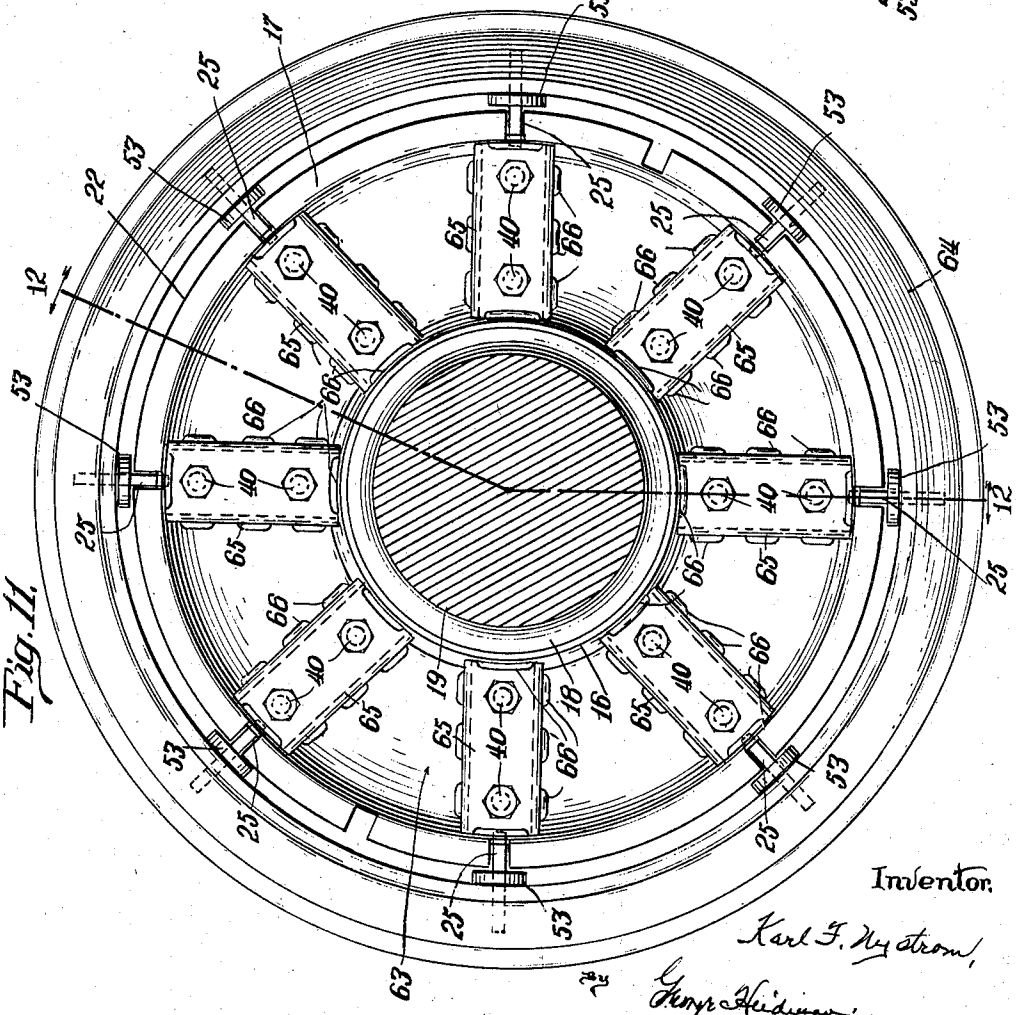


Fig. 11.



Inventor.
Karl F. Nystrom,
Henry Heidman
Attorney

Patented Apr. 30, 1940

2,198,787

UNITED STATES PATENT OFFICE

2,198,787

PULLEY

Karl F. Nystrom, Milwaukee, Wis.

Application March 6, 1939, Serial No. 260,052

13 Claims. (Cl. 74—230.8)

My invention relates to pulleys so formed as to be economical in fabrication and consists of a plurality of sheet metal elements to provide lightness while at the same time having the requisite strength and rigidity.

The invention has for its object the provision of a pulley which may be constructed to provide any number of belt receiving grooves.

My invention relates to a type of pulley which is more especially adapted for use in connection with the type of generators employed on railroad car trucks and also has for its object the provision of a pulley construction which may be readily assembled and applied to the driving member or axle of the truck and with certain modifications may be readily applied to the driven member or armature shaft of the generator; a pulley which will be practically self-balancing.

Another object of the invention is the provision of a pulley which will effect a rigid operative relation with the truck axle, whether of standard or special construction, and will properly align itself therewith; a construction of pulley which permits application to a truck axle without the necessity of removing the truck wheels.

A further object of the invention is the formation of pulleys composed of sheet metal elements or sections which are interchangeable, with all spoke elements or sections and rim elements or sections formed to a preselected standard to permit easy assembly.

The above enumerated objects and others, as well as the advantages of my invention, will all be readily comprehended from the following detailed description of the accompanying drawings, wherein:

Figure 1 illustrates one form of my improved pulley in side elevation shown applied to an axle or shaft.

Figure 2 is a transverse sectional view taken on the off-set line 2—2 in Figure 1.

Figure 3 is a perspective view of a section or half of one form of hub of my improved pulley.

Figure 4 is a perspective view of a section of a rim forming element.

Figure 5 is a perspective view of one of the spokes of my improved pulley.

Figure 6 is a detail sectional view illustrating a modified form of application of the hub by means of an adapter to a standard railroad car axle.

Figure 7 is a side elevation of a modification of the pulley for application to the armature shaft of a generator employed with railroad cars.

Figure 8 is a transverse sectional view taken on the off-set line 8—8 of Figure 7, looking in the direction of the arrows.

Figure 9 is a side elevation of a drive pulley involving certain modifications for application to a standard car axle.

Figure 10 is a sectional view taken on the off-set line 10—10 of Figure 9, and viewed in the direction of the arrows.

Figure 11 is a side elevation of a driving pulley applied to a special car axle and illustrating modified methods of reenforcement.

Figure 12 is a sectional view taken on the off-set line 12—12 of Figure 11 and viewed in the direction of the arrows.

My invention relates to pulleys which are especially intended for use on railroad cars for effecting a driving relation between a truck axle and the generator shaft, although equally adaptable to other uses; the invention for purposes of exemplification having been shown applied to a car axle and to a generator shaft.

The exemplification in Figures 1 and 2, illustrating a type more particularly applicable to a car axle, consists of pre-shaped sheet metal elements formed to constitute hub elements, spoke elements and rim elements.

The hub portion of the pulley, which may consist of two continuous or solid side members, in order to permit application to a car axle without removing the wheels preferably consists of two similar sections for each side of the pulley as shown at 15 in Figure 3 of sheet metal of preselected dimensions and formed or pressed into shape to provide the flanges 16 and 17 at the inner and outer perimeters; the flanges being made to slope outwardly in opposite directions as more clearly shown in Figure 2, where the flange 16 conforms to the oppositely tapered enlargement 18 formed on the axle 19, in Figure 2; or to the adapter means shown at 20 in Figure 6 employed in connection with a standard axle 21.

The flanges 16 and 17 are disposed toward the outer sides of the pulley elements or sections 15 and the flange 17 terminates in a substantially right angularly disposed perimetrical portion 22, which, at predetermined spaced apart points, is provided with slots 23; and an enlarged slot 24; the slots 23 being preferably spaced apart substantially equal distances while the enlarged slot 24 is arranged between two adjacent slots 23 adjacent an end of each hub section as shown in Figures 1 and 3. The enlarged slots 24 are employed to receive two spoke members when the hub-sides consist of segmental sections.

The slots 23 and 24 are adapted to receive the

spoke members 25, one of which is shown in detail in Figure 5. The spoke members 25 are of length commensurate with the desired width of the pulley so as to extend slightly beyond the sides of the pulley when in proper assembled position.

The spoke members of the axle or drive member are preferably formed at opposite ends with the tapered surfaces 26, 26, see Figure 5, which substantially conform to the outward flare of the flange portions 17 of the pulley sections or elements, see Figure 2, when seated in the slots 23 and 24.

The other or outer longitudinal side of each spoke member 25 is provided with equally spaced apart, substantially V-shaped projections or prongs 27, of number in keeping with the number of rim elements to be employed. The spoke member adjacent the base of each projection or prong and on each side is provided with a slot 28. Each spoke element 25 is also shown provided with the longitudinally spaced holes 29, for a purpose hereinafter described, thus making the spoke elements interchangeable for a pulley whose hub consists of continuous side sections or segmental sections as shown in Figure 1.

The projections or prongs 27 and the slots 28 are adapted to receive the rim elements, each of which consists of a pair of sheet metal semi-circular segmental sections 30, 30, see Figure 4. The driving belts more generally employed for driving the generator from the car axle are of V-shape cross-section and therefore each rim element section consists of a semi-circular strip of sheet metal whose inner and outer perimetrical portions 31 and 32 are off-set from each other with the intervening web portions 33 of the two sides of each rim element sloping or converging toward each other so that the outer perimetrical portions 32 of both sides will be in face-to-face contact, while the inner perimetrical portions 31 are spaced apart to permit the webs 33 to straddle the projections or prongs 27 of the spoke elements, with the inner perimetrical portions 31 seated in the respective slots 28 in the spoke members at opposite sides of the projections or prongs 27.

After the spokes 25 have been arranged in the slots 23 and 24 of the hub elements, the rim elements 30 are then inserted over the projections or prongs 27; the outer perimetrical flanges 32 of the complemental sections 30 are secured together, preferably by spot welding, and the inner perimetrical flanges 31 are also preferably welded in the respective slots 28 of the spoke elements, with the web portions 33 of the complemental sections 30, which straddle the V-shaped prongs of the spoke elements, preferably welded to the side edges of the projections or prongs 27 of the spoke elements, as shown in Figure 2, thereby providing circumferential substantially V-shape valleys or grooves for reception of the various belts, as shown at 35 in Figure 2.

When the hub sides consist of a pair of segmental sections as shown in Figure 1, they are provided with the enlarged slots 24 so as to receive a pair of spoke elements 25 which are preferably bolted to each other as shown at 36 in Figures 1 and 2, with the junctures between the segmental sections on the two sides of the hub preferably arranged ninety degrees apart as shown in Figure 1.

The intermediate or web portions of the hub sections are provided with a plurality of holes 38 arranged in two circumferential rows adjacent the inner and outer flange portions 16 and 17; the inner row being adapted to receive the bolts 39, while the holes in the outer row are adapted to receive the bolts 40, for drawing or forcing the two sides of the hub toward each other.

When the hub consists of segmental sections, I prefer to employ a pair of arcuate reenforcing plates 41 on each side of the hub to lap the junctures between the respective segmental sections; that is to say, each reenforcing plate 41 is secured to the adjacent ends of the two segmental sections of the hub, and hence the reenforcing plates on one side of the pulley will be in staggered relation with those on the other side because the splits or junctures between the segmental sections, as previously stated, are preferably arranged approximately ninety degrees apart.

Where the hub consists of two continuous annular pressed plates, the reenforcing plates may be omitted, as may also the enlarged slots 24 and the two pairs of bolted together spoke members shown in Figure 1.

My improved pulley illustrated in Figure 2 is shown applied to an axle 19 provided with an integral enlargement 18 tapered in opposite directions on opposite sides of the circumferential median line of the enlargement, which latter is also reduced back substantially to the main section of the axle and the enlargement centrally provided with a circumferential valley, as at 42, to increase the flexibility of the axle while at the same time making the axle more rigid than would be the case if the valley was omitted.

As shown in the drawings, the flare of the inner flange portion 16 of the hub elements approximates the taper of the enlargement 18, while the flare of the outer flange portion 17 approximates the tapered surfaces 26 of the spoke elements 25.

It is apparent, that when the nuts on bolts 39, which pass through the inner row of holes 38 in the webs of the hub elements, are equally screwed up on the bolts 39 that the flared flanges 16 will effect a wedging and gripping relation with the tapered surfaces of the axle enlargement 18, thereby firmly locking the pulley to the axle, while at the same time causing the pulley to properly align with the axle and hence to be in proper parallel alignment with the pulley or element to be driven by means of the series of belts driven or controlled by the axle pulley.

It is also apparent that when the nuts on bolts 40—which pass through the outer row of holes 38 in the webs of the hub elements—are screwed up, flared flanges 17 will effect a wedging relation with the tapered surfaces of the spoke elements which are held against outward radial movement by the plurality of rim segments seated therein and secured thereto as previously stated.

With the hub made in segmental sections, my improved pulley may be readily applied or replaced on a car axle without the necessity of removing the wheels; and where the hub consists of segmental sections arranged with the junctures of the sections on opposite sides offset or ninety degrees apart, it will be noted that the two pairs of bolted together spoke elements 25 will be located in an enlarged slot 24 of a hub section on one side of the pulley and in the enlarged slot 24 of the other hub section on the opposite side of the hub, thereby supplementing the function of the reenforcing plates 41 in rigidly holding the segmental hub sections together: the bolted together spoke elements being disposed

at the junctures between the rim segments, causes the latter to be held in position.

When my improved pulley is to be secured to the ordinary type of car axle, I provide the axle 21, see Figure 6, with an adapter comprising a rubber sleeve 43 whose outer perimeter, similar to the axle enlargement 18 in Figure 2, is provided with a double taper and preferably surrounded by a metallic member 44 made to conform to the rubber sleeve and adapted to receive the flared inner flange 16 of the hub elements. When the nuts on bolts 39 are screwed up tightly, the hub elements will move upwardly toward each other on the tapered surfaces, causing the rubber sleeve 43 to be compressed into snug gripping relation with the axle 21. The various elements of the pulley in every other respect are the same as those shown in Figure 2 and as heretofore described, with the hub elements consisting either of continuous annular members or of segmental sections; the rim being preferably of segmental sections which are preferably welded to the respective spoke members, which latter, in order to be interchangeable, are all provided with bolt receiving holes permitting their use in any slot in the hub.

In Figures 7 and 8, I illustrate a modification which is more especially intended as a driven pulley, namely a pulley secured to the armature shaft of a generator.

The driven or generator pulley also involves a number of preformed elements consisting of the rim elements 45 similar to those previously described, except that they may be made of continuous annular members, secured together in pairs as heretofore described to provide the V-shaped grooves or belt receiving channels between each pair, because in this instance the spoke members 46 may be inserted within the rim elements during assembly.

The spoke elements 46 on their outer perimeters are also provided with the projections or prongs 27 adapted to fit between the complementary sections of each rim element and with the slots 28 adapted to receive the inner perimeters of the rim elements. The inner perimeters of the spoke elements 46, instead of having the tapered surfaces, are each provided with a short extension 47 which is intended to be permanently secured or welded, as shown at 48, to the cylindrical hub or sleeve 49. The hub 49 is in the nature of a relatively thick tubing or sleeve with a tapared bore to receive the tapered end of the armature shaft 50; the bore and shaft being shown provided with a key-way at 51 and the end of the armature shaft being threaded and provided with a nut and washer whereby the operative relation is maintained.

In order to reenforce the spoke elements I provide the reenforcing plates or gussets 52 disposed radially between the respective spokes with the inner ends preferably welded to the hub 48 while the sides are welded to the adjacent spokes, thereby providing a very rigid structure.

The pulley in Figure 8 is shown on somewhat larger scale than the pulley in Figure 2, but it is understood that the width of the spokes 46 will correspond to the width of the spokes in the driving pulley and likewise the belt receiving grooves or channels will correspond with those of the driving pulley.

It will also be understood that the pulleys may be made with any desired number of belt receiving grooves or channels; it being preferable, where the pulleys are used for driving the generators of railroad cars, that a plurality of belts be employed.

The construction illustrated in Figures 9 and 10 is shown applied to a standard axle 21 provided with a rubber adapter 20 which may consist of equal segmental sections as disclosed in Figure 9 provided with metallic sleeve 44; the adapter as in the previously described construction being provided with a double taper.

Each side of the hub is shown consisting of two equal segments 15, similar to that shown in Figure 3, with the outer flange portions slotted to receive the spoke members 25, similar to that shown in Figure 5 and cut out to provide the tapering prongs and slots to receive the rim elements 30, all as heretofore described.

In the structure shown in Figures 9 and 10, each spoke element 25 is provided with an encircling elongated metallic strap 53 arranged in close contact with the slotted faces of the spokes 25 at the base of the slots and hence adjacent the base or inner perimeter of the rim elements 30. These reenforceing straps 53, at points coincident with the rim receving slots in the spoke members are then welded to the spokes and to the rim elements; the welds being preferably built up to form the collar or boss like portions indicated at 54, thereby integrally uniting the spoke and rim elements and reenforcing the slotted portions of the spokes.

The junctures between the rim segments at the ends or opposite sides of the pulley are preferably reenforced by splice plates 55 welded to the outer surface of the end segments of the rim as shown in Figure 9.

The hub portion of the pulley shown in Figures 9 and 10 on each side is provided with a pair of segmental reenforcing plates 56, flared outwardly at the outer perimeters in keeping with the flare of the hub elements; the plates being preferably welded to the hub elements as shown at 57; the reenforcing plates 56 at spaced apart points being preferably provided with gussets or radially disposed stiffeners 58; the reenforcing plates 56 and hub members 15 being apertured to receive the transversely disposed bolts 40 for holding the elements in assembled relation. The hub elements and reenforcing plates adjacent their inner perimeters at intervals are apertured to receive the bolts 59 which also extend through lobes formed on the split collars 60 which encircle the inner or base flanges 16 on each side of the hub; the collars, adjacent the splits being shown provided with radially disposed ears 61 which are apertured to receive bolts 62 whereby the collars are drawn tightly onto the base flanges of the hub and the collars and hub elements on opposite sides are drawn toward each other by screwing up the nuts on bolts 59, thus causing the hub sides to ride up on the oppositely tapered sides of the adapter or axle enlargement and force the hub into firm gripping relation with the axle.

In Figures 11 and 12 I show continuous hub and rim elements and the pulley applied to a car axle 19 provided with the oppositely tapered enlargement 18 similar to that shown in Figures 1 and 2; the hub sides 63, except that they are continuous or annular, are of the same general formation as the hub segments 15 employed in the previously described constructions and shown in detail in Figure 3, having the inner or axle engaging flanges 16 and the outer flange portions 22 slotted to receive the spoke elements 25 which are formed to receive the rim elements 64 which may be continuous and made substantially similar to the

rim elements heretofore described; the spokes preferably being provided with the reenforcement straps **53** welded to the spokes and rim elements at the slots in the spoke members.

The sides of the hub, coincident with each spoke, is shown provided with the radially disposed stiffener members **65** which extend from the inner flange **16** of the hub sides to the outwardly disposed flange portion **17** thereof; the stiffeners **65** being shown in the nature of channel plates with the sides of the channel disposed toward the hub sides. These channel plates **65** and the hub sides are provided with registering apertures to receive the transversely extending bolts **40** for drawing the opposite sides of the pulley toward each other and thereby effect gripping relation with the tapered enlargement **18** of the axle. The stiffener members **65** are then preferably welded along the edges of the sides and at their ends to the hub side members as indicated in Figure 11 at **66**.

The various forms of pulley shown not only provide lightness in construction but also the requisite strength and rigidity required in axle driven pulleys for driving the generator on rail road passenger cars; the exemplifications in practice are believed to be the best embodiments which, however, may possibly be modified in certain respects without departing from the spirit of my invention as defined in the appended claims.

What I claim is:

1. A pulley of the character described consisting of preformed elements comprising hub-sections arranged in parallel spaced relation and having outwardly sloping portions terminating in radially disposed perimeters provided with circumferentially spaced slots; elongated spoke forming elements provided with oppositely tapered surfaces on one longitudinal edge adapted to seat in said slots of the hub sections and having a plurality of equally spaced and outwardly tapering projections or prongs on the other longitudinal edge; a plurality of rim elements provided with radially tapering annular sockets adapted to receive the tapering projections or prongs of the spoke elements; and means whereby the spaced hub sections are drawn toward each other and wedging relation with the tapered surfaces of the spoke elements effected.

2. A pulley of the character described comprising a hub portion composed of dished plates arranged in parallel spaced relation and provided with laterally extending portions at their inner and outer perimeters, the portions at the outer edges terminating in radially disposed perimetrical portions provided with circumferentially spaced slots; a plurality of spoke elements composed of elongated plates arranged transversely of the pulley and seated in the slots of the hub portion, the outer longitudinal edges of the spoke elements having outwardly tapering projections arranged in spaced relation and slots on opposite sides of the base of each projection; a plurality of rim elements whose opposite sides are composed of annularly arranged sloping sheet metal plates having flat radially disposed marginal portions, the marginal portions at the outer perimeters of the plates of each element being arranged in face-to-face relation and secured together, while the marginal portions at the inner perimeters of the plates are spaced apart and secured in said slots of the spoke elements and receive the spoke projection therebetween, said rim elements being arranged in spaced relation to provide tapering belt receiving grooves therebetween; and means whereby the plates at opposite sides of the pulley are drawn toward each other and gripping relation with the spoke elements effected.

3. A pulley of the character described comprising, in combination with a driving axle provided with an oppositely tapered circumferential enlargement, a hub composed of pressed segmental strips formed to provide laterally disposed flanges at the inner and outer perimeters of the strips with the flanges at the inner perimeters sloping downwardly to engage the tapered enlargement on the axle while the flanges at the outer perimeters slope upwardly and terminate in radially disposed flat portions provided with circumferentially spaced slots, said segmental strips being arranged to constitute spaced apart pulley side walls; a plurality of spoke elements disposed transversely of the pulley and having oppositely tapering surfaces seated in said slots while the outer longitudinal edges of said elements are provided with rim attaching surfaces; rim elements composed of ring forming strips arranged in pairs and sloping toward each other with their outer perimeters secured together to form a rim element while their inner perimeters are attached to the outer longitudinal edges of said spoke elements, the respective rim elements being spaced apart to provide belt receiving channels therebetween; and means whereby the side walls of the hub are forced toward each other and wedging engagement with the axle enlargement and with the spoke elements effected.

4. A pulley of the character described comprising a hub composed of flat sided segmental metallic strips provided with laterally disposed portions at the inner and outer perimeters, the portions at the outer perimeters terminating in radially disposed flanges provided with circumferentially spaced slots, said segmental strips constituting the side walls of the pulley, the side walls being arranged in parallel spaced relation; a plurality of elongated spokes arranged transversely of the pulley and seated in said slots, said spokes being provided with a plurality of radially extending projections; rim elements composed of complemental segmental preformed sections having oppositely sloping surfaces terminating in flat marginal portions, the marginal portions at the outer perimeters of the complemental sections being arranged in face to face relation and secured together, while the marginal portions at the inner perimeters of the respective sections are disposed on opposite sides of the correlated projections of the spokes and secured thereto; and means for securing the hub side walls together and inducing the latter to effect a binding relation with the spokes.

5. A pulley of the character described comprising a hub portion; spoke elements disposed transversely of and welded to the hub portion and provided with rim receiving slots arranged in spaced relation on the outer radially disposed edges; rim elements arranged in said slots; and reenforcing bars disposed along opposite sides of each spoke adjacent the inner perimeters of the rim elements.

6. A pulley of the character described comprising a hub portion; elongated spoke plates disposed transversely of and welded to the hub portion and provided with radially disposed slots; rim elements of V-shape cross-section seated in said slots and arranged to provide belt-receiving grooves therebetween; and reenforcing

bars arranged along opposite sides of each spoke plate adjacent the inner perimeters of the rim elements and welded to the spoke plates and to the rim elements.

7. A pulley of the character described comprising a hub portion composed of laterally spaced apart arcuate plates flanged at the inner and outer perimeters, the flanges at the inner perimeters flaring outwardly to effect gripping relation with the axle when the plates at opposite sides of the hub are drawn toward each other, while the flanges at the outer perimeters flare outwardly and radially and are provided with circumferentially spaced slots; segmental band forming elements arranged on the flanges at the inner perimeters of the hub plates at opposite sides whereby the hub plates are drawn into clamping engagement with the car axle; elongated spoke plates disposed transversely of the hub portion and seated in said slots to extend radially and their outer edges provided with tapering cut-out portions terminating in radial slots; rim elements arranged in the slots of adjacent cut-out portions; and reenforcing bars arranged lengthwise of the spoke plates adjacent the radial slots and welded to the spoke plates and to said rim elements.

8. A pulley of the character described comprising a hub composed of sheet metal spaced apart side walls slotted at their outer perimeters; elongated spoke elements arranged tansversely of the hub and seated in said slots, the outer edges of the spoke elements being of sawtooth formation with intervening slots; rim elements composed of preformed arcuate strips secured together at their outer perimetrical margins into V-shape formation in cross-section to match the saw-tooth formation of the spoke elements, the inner perimeters of said rim elements being seated in the slots of the spoke elements; reenforcing plates secured to the side walls of the hub; and means disposed through said plates and hub side walls for drawing the side walls toward each other.

9. A pulley of the character described comprising a hub composed of sheet metal side walls arranged in spaced relation and flared outwardly at their outer and inner perimeters; segmental reenforcing plates flanged at their outer perimeters to match the flared outer perimeters of the hub side walls, said plates having flange reenforcing gussets; elongated spoke elements arranged transversely of the hub and secured to the outer perimeters of the hub side walls, said elements being formed to provide rim holding portions; sheet metal rim forming elements arranged to match the holding portions of the spoke elements and to provide a plurality of substantially V-shape grooves therebetween; and bolts disposed through said reenforcing plates and the hub side walls for drawing the side walls toward each other.

10. A pulley of the character described comprising, in combination with an axle having an oppositely tapered enlargement, a hub composed of spaced apart sheet metal side walls flared outwardly at their inner perimeters; spoke elements arranged transversely of and welded to the hub and provided with rim receiving surfaces; sheet metal rim elements formed to match said surfaces of the spoke elements and arranged to provide V-shape belt receiving grooves; means whereby the hub side walls of the hub are drawn toward each other and the flared portions forced into wedging engagement with the tapered enlargement of the axle; and split bands disposed about the flared perimeters of the hub side walls for clamping the latter in place on the tapered axle enlargement.

11. A pulley of the character described comprising a hub; spoke elements arranged transversely of the pulley and with their inner longitudinal edges secured to the hub, the outer perimeters of the spoke elements being transversely slotted at spaced apart intervals; and rim forming elements, the side walls of each rim element consisting of separate preformed strips with a perimetrical portion at the inner perimeter adapted to seat in the slots of the spoke elements and welded in place, while the outer perimetrical edges of the strips of the two sides of the rim element are arranged in face-to-face relation and secured together.

12. In a fabricated pulley of the character described, a hub, spoke elements composed of elongated narrow flat-sided plates adapted to extend transversely of the hub with their longitudinal edges disposed radially and the inner edges adapted to be secured to the hub while the outer longitudinal edge of each plate is provided with a plurality of equally spaced outwardly tapering projections and slots adjacent the base of each projection; and a rim element composed of narrow strips of sheet metal shaped into annular form, united at the outer perimeter and spaced from each other at the inner perimeter to provide a rim element of substantially inverted V-shape cross-section adapted to straddle and match a projection of the spoke element while the inner perimetrical edges of both sides of said rim element are arranged in the slots at opposite sides of the correlated projections of the spoke elements and welded therein.

13. A pulley of the character described, in combination with a driving shaft or axle provided with an oppositely tapered circumferential adapter; a hub composed of flat sided metallic strips whose marginal portions are disposed laterally and flare in opposite directions, the flared portions at the outer perimeters terminating in radially disposed flanges provided with circumferentially spaced apart slots while the flared portions at the inner perimeters slope to match the tapers of said adapter to effect wedging relation therewith; spoke elements composed of elongated plates arranged transversely in the slots of the flanges of the hub members, the inner longitudinal edges of the spoke plates being tapered toward opposite ends in conformance with the flare of the outer marginal portions of the hub members; rim elements of inverted V-shape cross-section secured at their inner perimeters to said spoke elements in spaced relation to provide a V-shape belt receiving groove; and means whereby the side walls of the hub are forced toward each other into wedging engagement with said adapter and with the tapered edges of the spoke elements.

KARL F. NYSTROM.