

Nov. 24, 1931.

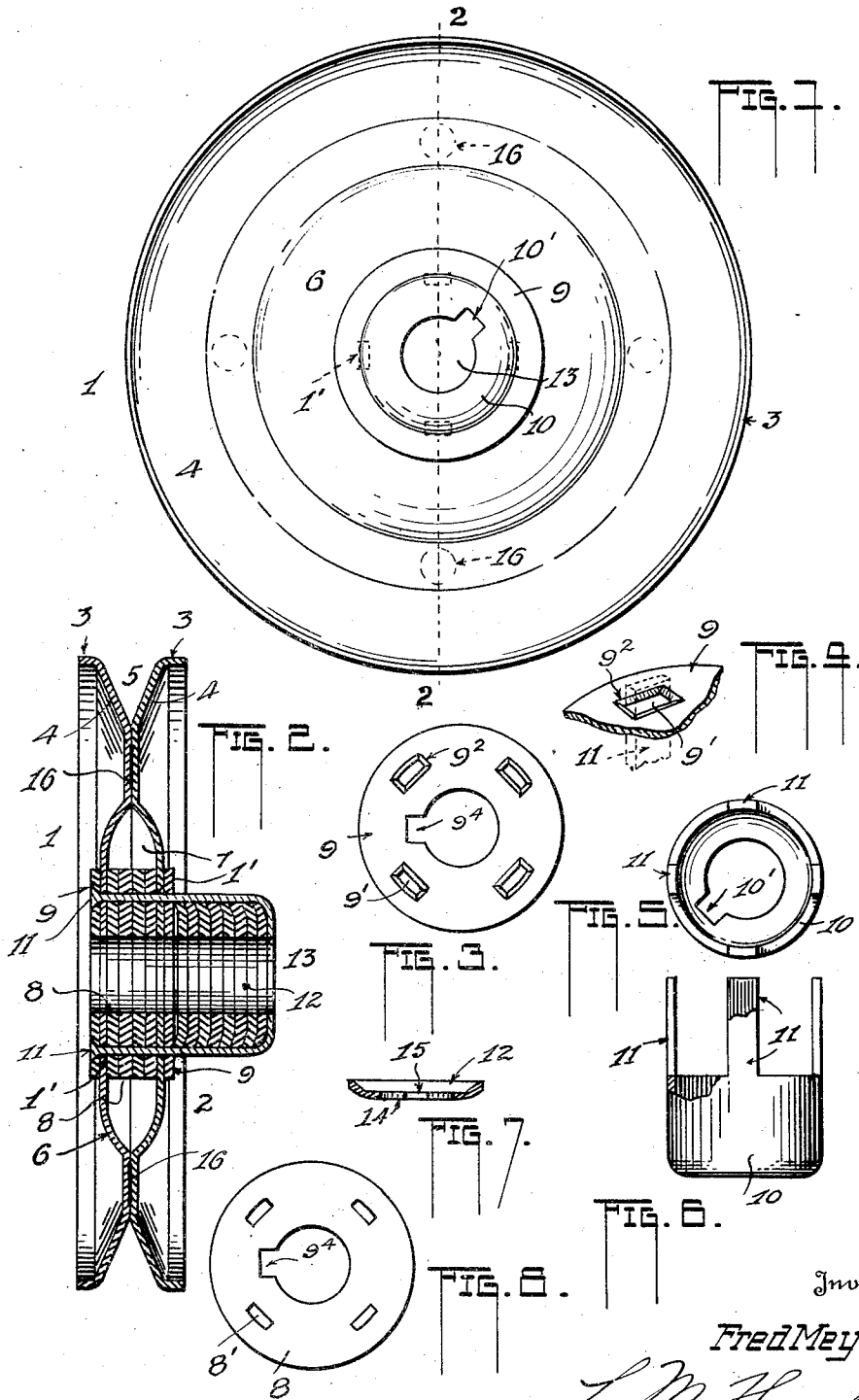
F. MEYER

1,832,871

PULLEY

Filed Sept. 12, 1928

2 Sheets-Sheet 1



Inventor

Fred Meyer,

By

L. M. Shurlow

Attorney

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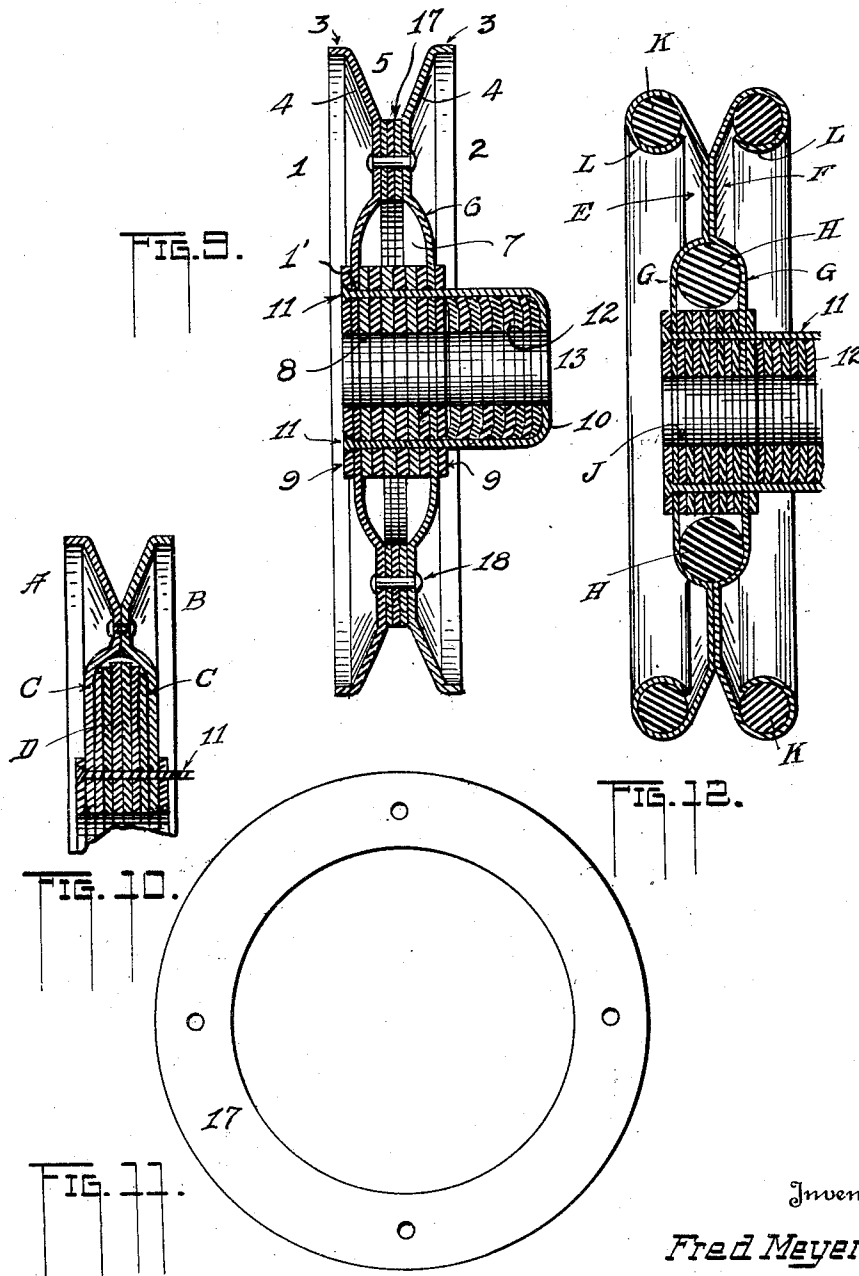
F. MEYER

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Inventor

Fred Meyer,

By

L. M. Hurston

Attorney

UNITED STATES PATENT OFFICE

FRED MEYER, OF GALESBURG, ILLINOIS

PULLEY

Application filed September 12, 1928. Serial No. 305,416.

This invention relates to pulleys, and is directed particularly to pulleys fabricated from sheet metal, and the method of producing the same.

An object of the invention is to construct pulleys of any desired dimensions from sheet metal stampings whereby they can be more readily made to run true, and that they may be more quickly produced at reduced cost, while being exceedingly rigid throughout.

Another object is that pulleys made from stock stampings of a given diameter may be altered in width, and, if desired, may be weighted as wanted whereby the pulleys may answer as flywheels in addition to their pulley duties.

Still another object is to construct the body of a pulley and its hub from stamped metal parts including projections on said hub adapted for use in connecting the whole as a rigid structure.

A further object is to furnish a pulley of sheet metal that may be changed in the matter of width of belt groove by adding parts between the body parts, as well as to increase the pulley's weight to provide for flywheel effects.

In addition to these objects the invention lies in certain details of construction and arrangement of parts to be pointed out herein and to form the subject of certain of the claims to follow.

In the appended drawings forming part hereof,

Figure 1 is a side elevation of a pulley constructed according to my invention.

Figure 2 is a transverse section of the pulley on line 2—2, Figure 1.

Figure 3 is a side elevation of a clamping ring shown in the first two figures.

Figure 4 is a perspective of part of a ring of the type shown in Figure 3 but much enlarged.

Figure 5 is an end elevation of a hub cap or shell.

Figure 6 is a side elevation of the same.

Figure 7 is a transverse section of a filler ring as part of the pulley hub.

Figure 8 is a side elevation of a spacer ring shown in Figure 2.

Figure 9 is a transverse section of the pulley shown in Figures 1 and 2 showing its main parts spaced from one another for widening the belt groove thereof.

Figure 10 is a transverse section of part of a pulley of a slightly modified type showing a weight adding ring.

Figure 11 is a plan of a spacer ring shown in Figure 9, and

Figure 12 is a modified form of a weighted pulley, in cross section.

Pulleys of any desired diameter may be constructed and in practice I have produced them up to a diameter of at least fifteen inches, employing dies from which to form the various parts used in constructing the same, and drawings herein showing a pulley of about five inches diameter as an example of the method employed and the parts used.

Duplicate portions 1 and 2 are provided as to the main parts or body of the pulley, Figures 1 and 2, it being observed that each preferably includes a peripheral flange 3, while inward therefrom the parts are dished as at 4 so that when these parts are placed back to back a V-shaped space is created in this instance to receive the now widely used V-type of belt, not shown.

The more central zone of the stamped parts 1, 2 are each outwardly bellied as at 6 creating a space 7, this structure serving as a brace or trussing for strengthening the pulley as well as to provide for filler washers to be interposed between the walls thus spread. That is to say, a series of spacers 8 are provided, the combined bulk of which may correspond in thickness to the space provided between said parts 1, 2, and abutting on each outer surface of the latter is a clamping ring 9 to receive attention later.

In the form shown in Figures 1 and 2 the structure just described constitutes the body of the pulley, attention now being directed to the hub for the pulley and the method of constructing it and the manner of its attachment to said body. In Figures 2, 5 and 6 the said hub is shown to be made up of an outer drawn shell 10 in the form of a cup projecting from whose flange-ends is a series of extensions or arms 11 of a length to permit

them to extend entirely through the rings 8 and the parts 1 and 2 as well as the said clamping rings 9. In order to provide a hub of solid form throughout a series of filler rings 12, Figures 2 and 7 are forced into the shell 10 entirely filling the space thereof and providing a body, see Figure 2, in which a bore 13 is created for the pulley shaft, not shown. Said rings 12, so created by reason of the bore 13, are preferably made in a slightly concave or dish form as shown in Figure 7 and in that form will just snugly fit into the cavity of the said shell 10, each ring having an opening 14 which may be entirely circular, when a set screw is to be used as the securing means for the pulley, or may have a notch 15 as a keyway to correspond with a like notch or keyway in the shell 10. Since of a dished form the rings after being placed within the shell are spread to a slightly larger diameter by means of a suitable die and by the use of a very heavy pressure. In other words, with a die about of the diameter of the rings and with the named heavy pressure it is clear that the peripheries of the rings can be spread outwardly into frictional contact with the shell walls thus forming a hub as solid as though the whole were of a single body of metal.

All of the spacer rings 8 and the clamping rings 9 as well as the parts 1, 2 are provided with a series of holes evenly spaced from the bore 13 and correspond in position and spacing to the extensions 11 of the hub-shell 10. In Figure 8 these holes are indicated at 8' in one of the spacer-plates 8, while in Figure 3 the holes are designated at 9' in one of the clamping plates or rings 9, said holes in one of the latter being preferably countersunk as at 9², see Figure 4, for a purpose to appear. Again, as shown in broken lines in Figure 1 and in Figure 2 the parts 1, 2 have corresponding holes 1'.

When the several parts of the pulley structure are adjusted to bring all of the holes into alignment the extensions of the shell 10 may be passed therethrough the extremities thereof being "upset" or riveted into the countersinks 9². The two clamping plates are provided as a finish for the pulley one of them receiving the open end of the shell 10 against it. When the assembly of parts is subjected to pressure and the extensions are thus riveted the whole structure is perfectly rigid and as secure as though a cast body. The hub since made up of the shell portion 10 including the filler rings 12, and since, also, it is affixed to the body by having its extensions 11 passing through the whole provides an exceedingly staunch job.

The parts 1, 2 may be spot welded at 16. Figures 1 and 2, or may be otherwise secured one to the other.

When the pulley is otherwise complete a tool may be inserted into the bore 13 for

smoothing the same and making it uniform throughout, this being true, as well, of the keyway created therein by the notches 9⁴, 10⁴, 15.

In Figure 9 the same structure is shown, the parts being identified by the same reference characters as before. In this case, however, the main parts 1, 2 are separated a distance equal to that of a belt, not shown, that may be of a larger cross-section than would fit the groove of the pulley shown in the earlier figures. That is to say, where the use of a belt of larger size is desired a wider spread of the parts 1, 2 is necessary and to that end one or more spacing rings 17 may be inserted between said parts 1, 2 whereby to provide the necessary or required separation, one of the said rings being shown in Figure 11, and rivets 18, for example, may be employed at several positions to complete the structure.

These additional spacing rings also serves as an additional weight thus giving a fly wheel effect to the pulley, or in Figure 10 is shown a wheel having the same belt space as Figure 2 but in this case the parts designated by A, B correspond to 1 and 2 in the earlier figures and are formed each at corresponding positions with the outwardly bulging portion C within which is enclosed a body that may be composed of one or more rings D corresponding in form to that shown in Figure 10. The pulley may be made as heavy as desired in this way to provide for flywheel effects.

In this case the said rings D which form the inner hub rings 8 of Figure 2 are enlarged as to diameter and thus the added weight results.

Again, in Figure 12 the body portions E, F, have the bulging portions G within which may be enclosed a weight-ring H in addition to the flat spacer rings J as before, thus adding weight for fly wheel purposes.

In addition, two rings K each of a diameter substantially equal to that of the pulley are housed in the pulley's rim, the metal of the members or portions E, F, being formed about the rings as denoted at L. This construction is very efficient for fly wheel effects and any weight may be added to a wheel of a given diameter by increasing the cross section of any such ring K so used.

It is to be understood that my invention applies to flat face pulleys as well as those of the grooved type since my improved construction applies equally to either.

I claim:

1. A pulley including a pair of stamped metal members forming its body, the same adapted to lie one upon the other and spaced from each other near their perimeters creating a belt groove, said members also being spaced at their centers of rotation, a series of plates interposed between the members filling

said space creating a hub portion, a hub portion outside one of the members abutting thereon comprising a series of plates, and means to secure all of the described parts in rigid relation.

5 2. A pulley comprising a pair of stamped metal members forming the body thereof abutting one upon the other and spaced apart in the central zones thereof, a series of plates interposed between the members creating a
10 hub portion, a hub portion comprising a cupped member having projections extending through the said members and plates and secured therein, and a series of plates within
15 and filling the cupped member, there being a bore extending through all of the described parts.

3. A pulley comprising a pair of stamped members abutting one on the other and each
20 having a central outwardly bulged zone together creating a cavity between the members, a series of plates filling the cavity and abutting upon both the stamped members, there being a series of holes through all of the
25 named parts, a cupped shell having extensions to pass through the said holes and secured at their extremities, and a series of members lying upon one another filling the cavity of the shell and frictionally engaging
30 the walls thereof.

4. A pulley including a pair of stamped metal members lying back to back spaced apart at the central zones thereof, a series of
35 plates lying between and abutting upon both members, a cupped portion abutting upon one side of the structure and having fingers extending entirely through the same and riveted upon the opposite side of such structure, and
40 a series of filler plates within the cup immovably fixed therein.

5. A pulley including a pair of stamped metal members lying back to back spaced apart at the central zones thereof, a series of
45 plates lying between and abutting upon both members, a cupped portion abutting upon one side of the structure and having fingers extending entirely through the same and secured upon the opposite side of such structure, and a series of filler plates within the
50 cup immovably fixed therein, there being a bore extending through the entire structure thus built up.

6. A pulley of sheet metal including a pair of stamped members abutting each other
55 forming the pulley body and each spread apart from the other at its center, a series of plates filling the space thus created, a clamping ring outside and abutting each member, a cupped portion having extended fingers
60 piercing the whole and secured upon one of said rings, and a series of filler plates in said cupped portion abutting the other of the clamping rings, the said cupped portion constituting an extended hub portion.

65 7. A pulley including in its construction a

pair of stamped members abutting each other and flared in opposite directions to form a belt groove between them, a ring abutting each member at its outer side, each member at its perimeter enclosing the ring adjacent to
70 it, the center of the opening of the ring coinciding with the axis of rotation of the pulley.

8. A pulley including in its construction a pair of stamped members abutting each other and flared in opposite directions to create
75 a belt groove between them, a ring lying in the plane of the pulley at each side thereof, each member at its edge engaging around and enclosing its adjacent ring, the said members being spaced apart near their centers, a ring
80 enclosed between the members in the resultant space, a series of plates interposed between the members in said space within the bore of said ring, and means to secure the whole relatively.

9. A pulley including a pair of abutting stamped members forming the pulley body, said members being spaced to form a belt groove and spaced at their centers forming
90 a cavity, a solid filler within the cavity abutting the members, and a hub portion consisting of a member having an integral projection extending through the filler and the members and secured with respect thereto.

In testimony whereof I affix my signature.
FRED MEYER.

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