E. PHILIPS.

SPLIT METAL PULLEY.

APPLICATION FILED JAN. 5, 1909.

940,720.

Patented Nov. 23, 1909.

Fig. 1.

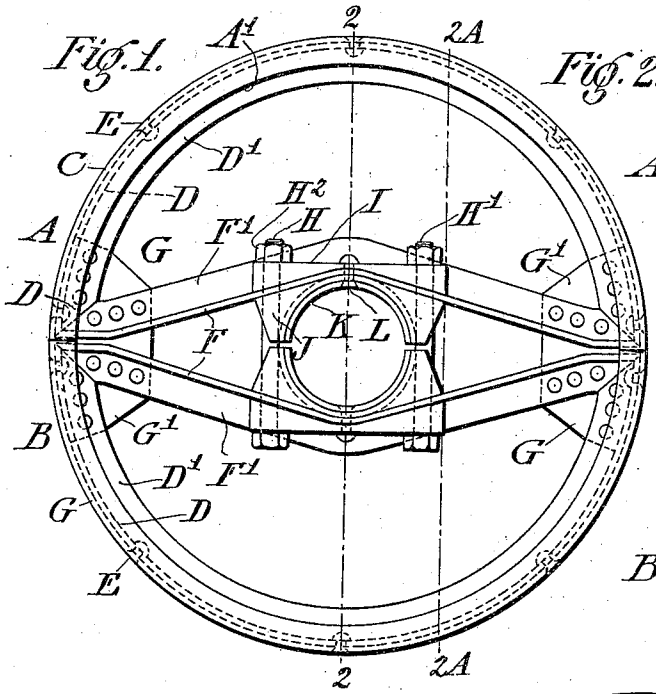


Fig. 2.

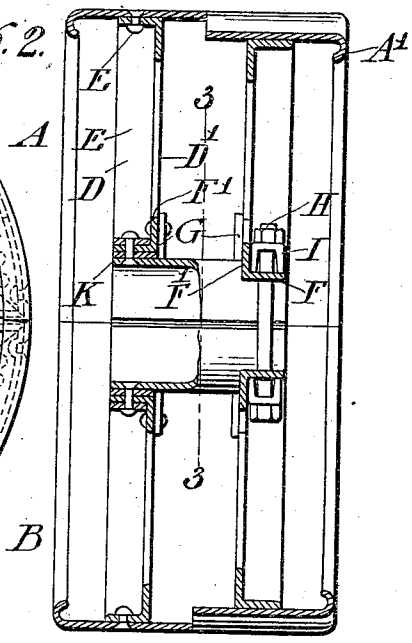


Fig. 3.

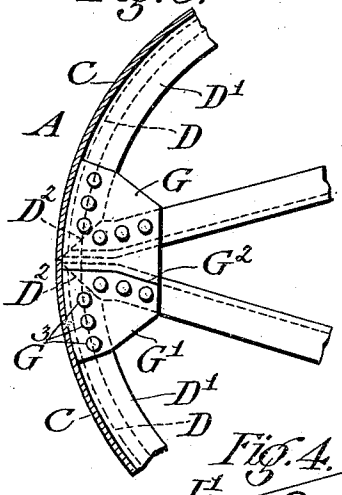


Fig. 6.

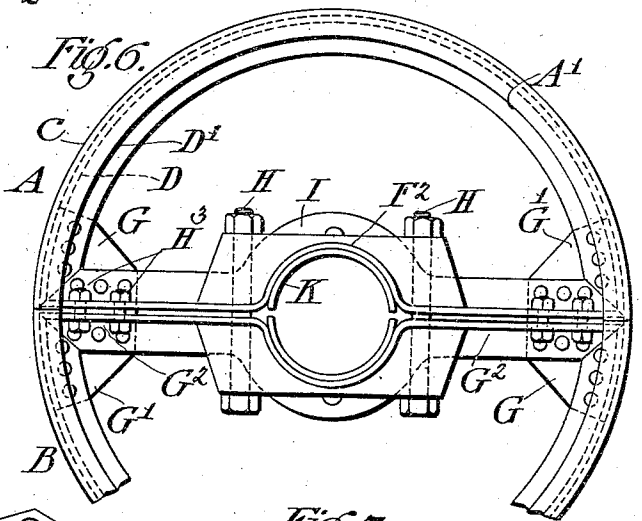


Fig. 4.

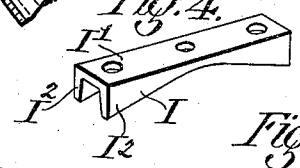


Fig. 7.

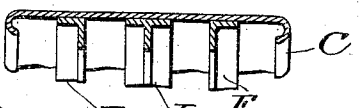
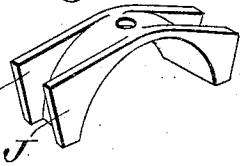


Fig. 5.



WITNESSES:

A. Stewart

D. Williams

INVENTOR

Ernest Philips.

BY

Francis J. Lawless

ATTORNEY.

UNITED STATES PATENT OFFICE.

ERWIN PHILIPS, OF COLUMBUS, OHIO, ASSIGNOR TO CHARLES S. DAVIS, OF PHILADELPHIA, PENNSYLVANIA.

SPLIT METAL PULLEY.

940,720. Specification of Letters Patent. **Patented Nov. 23, 1909.**

Application filed January 5, 1909. Serial No. 470,784.

To all whom it may concern:

Be it known that I, ERWIN PHILIPS, a subject of the Emperor of Germany, residing in the city of Columbus, in the county of Franklin, in the State of Ohio, have invented a certain new and useful Improvement in Split Metal Pulleys, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

The present invention relates to split metal pulleys, that is, pulleys made in two separable parts, to permit the pulleys to be readily put in place on and removed from their shafts.

The object of the present invention is the production of a satisfactory pulley of the kind referred to which is simple in construction and reliable in operation, easily put on and removed from its shaft and can be manufactured at a relatively low cost. This I accomplish by building up a pulley for the most part out of rolled metal parts of readily obtainable cross-sections and so shaping the parts that they can be easily formed and can be easily assembled, and when assembled, unite to form a pulley in which the material is so disposed that the pulley possesses great strength for the weight of the material used.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention however, and the advantages possessed by it, reference may be had to the accompanying drawings and descriptive matter, in which I have illustrated and described several of the forms in which the invention may be embodied.

Of the drawings: Figure 1 is an end elevation of a complete pulley. Fig. 2 is a sectional elevation, the left half of the section being taken on the line 2—2 of Fig. 1 and the right half on the line 2^A—2^A of Fig. 1. Fig. 3 is a partial sectional elevation taken on the line 3—3 of Fig. 2. Figs. 4 and 5 are perspective views illustrating features of construction employed in the pulley shown in Figs. 1 and 2. Fig. 6 is an elevation, taken similarly to Fig. 1, showing a modified construction, and Fig. 7 is a partial sectional elevation through the rim and stiffening ribs of a pulley, illustrating a further slight modification.

In the drawings, and referring first to the construction shown in Figs. 1 to 5 inclusive, A and B represent the two halves of the split pulley, which may be substantially alike. Each half comprises a segmental rim portion C, stiffening ribs D, arms F and hub portions I, J and K. The rim portion C is formed of a sheet metal plate bent into a semi-circle and may have its edges rounded off as indicated at A′. The stiffening ribs D, of which there are two to each pulley half in the form of construction shown in Figs. 1 to 5 inclusive are alike and are each formed of a flanged bar of the kind known as an angle bar, one flange of the bar bearing against the inner surface of the corresponding segment and the other flange of the angle bar being radially disposed. The arm portions F are similarly formed of angle bars. Each arm extends between and is secured to the opposite ends of the corresponding rim segment, the connection being made by means of gusset plates G and G′, each of which is riveted to the radial flanges D′ of one end of the corresponding stiffening rib D and to the parallel flange of the arm F. The corresponding flanges D′ and F′ are cut away to meet at D^2 as shown.

As shown best in Fig. 3, the gusset plates G are extended to overlap the adjacent ends of the arms F secured to the other half of the pulley, the gusset plates G′ being cut away to permit the edges of the two plates to abut, as indicated in Fig. 3 at G^2. The two gusset plates G′ at the same rim joint should be at opposite sides of the pulley arms. In the construction shown where the flanges of the arms F parallel to the axis of the pulley extend toward the ends of the pulley it will be observed the gusset plates are on the inner sides of the arms, *i. e.* one on the right side of one arm and the other on the left side of the other arm. With this arrangement the gusset plates G′ at each rim joint serve to prevent a movement of either pulley half relative to the other in a direction parallel to the axis of the pulley. The arms F of the pulley halves A and B are spread apart to provide a seat or space for the shaft on which the pulley is to be mounted. As shown, each pulley arm F is bent into a flattened V shape with its apex pointing toward the crown of the rim segment to which the rim is connected. By shaping the arm in this manner, I provide

sufficient room for the shaft while subjecting the arm in its formation to a bending or shaping operation which has very little tendency to weaken the arm. This seat is formed by means of a semi-cylindrical bushing member K and a spacer J, which may be formed of sheet metal bent into the form shown in Fig. 5, or may be formed of forged or of cast metal. At the outer side of the shaft seat, each arm F is provided with a trough shaped spacer I having a bottom I′ and sides I^2 which are cut away at the edges remote from the bottom I′ to fit the contour of the flange of the arm F, parallel to the axis of the pulley. Each arm F and the corresponding hub members I and J are secured together and to the bushing member K by a rivet L. Bolts H serve to connect each arm of each pulley half to the corresponding arm of the other pulley half. These bolts pass through the members I, axial flanges of arms F, and between the ears J′ of the corresponding members J.

It will be observed that the construction is such that the heads H^2 (and by the term heads, I mean to include nuts threaded on as well as heads integrally connected to the bolts), are seated on the bottoms of the trough shaped members I, which extend transversely to the direction of the bolts H.

The construction shown in Fig. 6 differs from that in Fig. 1 in that each arm F instead of being shaped so that each half is inclined to the other half has its end portions in alinement with each other and united by a circular hub portion F^2. This allows the hub parts J to be dispensed with and requires some modification in the shape of the members I which may however be generally like the members I of the construction first described. The bending operation to which the arms are subjected, in the form shown in Fig. 6, in order to provide the shaft seat, is much more severe than that to which the arms are subjected in the form shown in Fig. 1. On this account I prefer the arm construction of Fig. 1 to that of Fig. 6 in many cases. In this form also, the opposing arms F of the two pulley halves are connected together adjacent the rim joints by bolts H^3.

The construction shown in Fig. 7 shows the use of a stiffening rib L in the form of a T bar, which is secured between the stiffening ribs F and may or may not have pulley arms connected to it. There are, it will be understood, in any pulley as many stiffening ribs and pulley arms as are necessary or desirable to give the pulley the requisite strength and rigidity.

The simplicity of the construction illustrated, and the ease with which the pulley can be put on and removed from its shaft, the accessibility of the clamping bolts H and H^3 being particularly advantageous, are apparent from an inspection. Among other advantages not so readily apparent, which may be mentioned, are the fact that the pulley as a whole contains no weak joints and no portions in which the metal has been bent or deformed in such manner as to weaken it, and that the manufacture of the pulley does not require expensive machinery for shaping and assembling the parts in order to make the process of manufacture commercially practical. The pulleys shown may be manufactured for use in all the different commercial sizes without any substantial change in shape or design.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is,

1. A metallic pulley formed in halves, each comprising a sheet metal rim segment, circumferential stiffening ribs connected to the segment and formed of flanged bars bent into arcs, with one flange of each rib bearing against the inner side of the segment and another flange extending transversely to the axis of the pulley, pulley arms formed of flanged bars, each having one flange extending transversely to the axis of the pulley, and gusset plates connecting the ends of the arms to the ends of the segment, each gusset plate bearing against and being secured to the transverse flanges of one pulley arm end and the corresponding stiffening rib end, some of the gusset plates being extended to overlap the pulley arms connected to the other rim segment from that to which those gusset plates are connected to limit the movement of one pulley rim segment relative to the other in a direction parallel to the axis of the pulley.

2. A metallic pulley formed in halves, each comprising a sheet metal rim segment, circumferential stiffening ribs connected to the segment and formed of flanged bars bent into arcs, with one flange of each rib bearing against the inner side of the segment and another flange extending transversely to the axis of the pulley, pulley arms formed of flanged bars, each having one flange extending transversely to the axis of the pulley and in the same plane with the transverse flange of one of said ribs, and gusset plates connecting the ends of each pulley arm to the ends of the corresponding rib, said gusset plates bearing against and being secured to the transverse flanges of the rib and pulley arm.

3. A metallic pulley formed of halves, each comprising a sheet metal rim segment, circumferential stiffening ribs connected to the segment and formed of flanged bars bent into arcs with one flange of each rib bearing against the inner side of the segment and another flange extending transversely to the axis of the pulley, and pulley arms formed of flanged bars, each having one

flange extending transversely to the axis of the pulley and another flange extending parallel to the axis of the pulley, each pulley arm being bent into a flattened V, the apex of which points toward the crown of the rim segment to which it is connected, a spacer for each pulley arm having one side shaped to fit over the apex of, and bear against, the outer surface of that flange of the corresponding pulley arm which is parallel to the axis of the pulley, said spacer having its opposite side parallel to the plane of separation of the two pulley halves, and bolts extending transversely to said plane and passing through the spacers and the pulley arm flanges engaged by the spacers of an opposing pair of pulley arms for securing the two pulley halves together.

4. A metallic pulley formed of halves, each comprising a sheet metal rim segment, circumferential stiffening ribs connected to the segment and formed of flanged bars bent into arcs, with one flange of each rib bearing against the inner side of the segment and another flange extending transversely to the axis of the pulley, and pulley arms formed of flanged bars, each having one flange extending transversely to the axis of the pulley, each pulley arm being bent into a flattened V, the apex of which points toward the crown of the rim segment to which it is connected, and spacers for each pulley arm formed of a trough shaped metal part, the sides of which are shaped to fit over the apex of and bear against the side of that flange of the corresponding pulley arm which is parallel to the axis of the pulley and having its bottom extending parallel to the plane of separation of the two pulley halves, and bolts extending transversely to said plane and passing through the spacers and the pulley arm flanges engaged by them of an opposing pair of pulley arms for connecting the two pulley halves together.

ERWIN PHILIPS.

Witnesses:
O. J. GOSNELL,
ALBERT MUMMA.