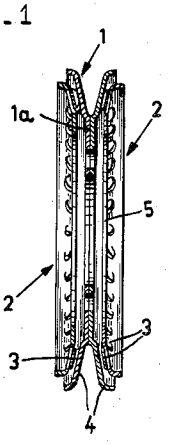
July 15, 1958 W. NEUMANN 2,842,974

COOLING MEANS FOR V-BELT PULLEYS

Filed Feb. 12, 1957

Fig. 1



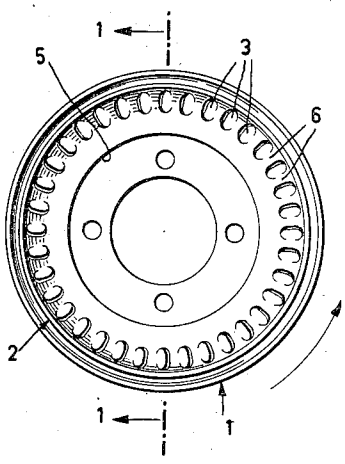


Fig. 2

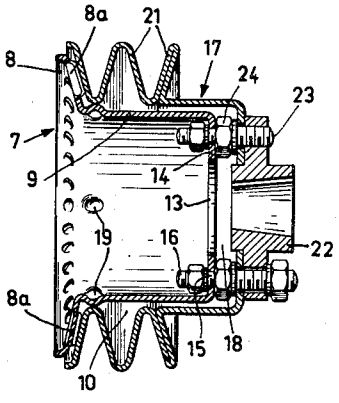


Fig. 3

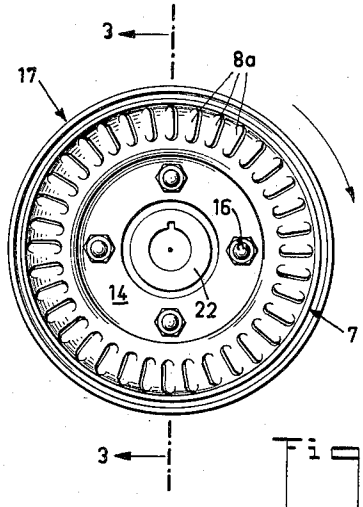


Fig. 4

WILLY NEUMANN
INVENTOR.

BY Kurt Kelman

AGENT

United States Patent Office

2,842,974

Patented July 15, 1958

2,842,974

COOLING MEANS FOR V-BELT PULLEYS

Willy Neumann, Wilhelmsfeld, Heidelberg, Germany, assignor to Motor-Condensator Compagnie, Schloz KG., Mannheim, Germany

Application February 12, 1957, Serial No. 639,733

7 Claims. (Cl. 74—230.01)

The present invention relates to V-belt pulleys, and more particularly to means for removing heat from the side walls of rotating pulleys.

V-belts running in the grooves of V-belt pulleys slip in relation thereto during rotation of the pulleys whereby friction heat develops and is absorbed by the pulleys, especially if they are made of good heat conducting material, such as metal. Small pulleys operating at high speeds are particularly subject to overheating, due to the friction heat and the resultant deterioration and wear of the belts often require frequent replacements thereof.

It is accordingly the principal object of the present invention to provide means for keeping V-belt pulleys relatively cool during operation.

It is a concomitant object of this invention to provide V-belt pulleys assuring a longer belt life than heretofore obtainable.

The invention will be described in detail in connection with two illustrative embodiments thereof, taken in conjunction with the accompanying drawing wherein:

Fig. 1 is a sectional view along line 1—1 of Fig. 2 of a V-belt pulley in accordance with one embodiment of the invention;

Fig. 2 is a top view of Fig. 1;

Fig. 3 shows a sectional view along line 3—3 of Fig. 4 of another embodiment; and

Fig. 4 is a top view of Fig. 3.

In general, I accomplish the desired results by providing a vane wheel type of attachment at one or both side walls of a V-belt pulley. When the pulley with its vane wheel or wheels rotates, an air current will be created to cool the walls of the pulley groove.

Referring now to Figs. 1 and 2, the pulley 1 comprising recessed center portion 1*a* with its peripheral side walls 4 forming a circumferential groove for a belt (not shown) is shown provided with pulley attachments 2. While two attachments at both sides of the pulley are illustrated, because preferred, the purpose of the invention will be at least partially obtained with a single attachment at either side of the pulley. As more clearly shown in Fig. 2, the attachment 2 has the form of a vane wheel with a peripheral row of vanes 3 impressed into the wheel. Advantageously, the vane wheel may be pressed from a disc of sheet metal.

Preferably, the vane wheel is saucer-shaped to conform to the side walls of the pulley, the peripheral portion carrying vanes 3 being upwardly tapered to fit peripheral side walls 4 of the pulley.

The attachment may be fixedly mounted on the pulley by any suitable means. For instance, the vanes may be spot-welded or induction-soldered to walls 4.

In operation, when the pulley with its vane wheels rotates, and air current will enter through central aperture 5 of the attachments and will leave through channels 6 delimited by vanes 3. The thus created air current will flow past the groove walls 4 and continuously remove the friction heat therefrom.

Figs. 3 and 4 illustrate the principles of the invention

applied to a multi-groove pulley. The hollow V-belt pulley 17 is shown provided with corrugated side wall portions 21 forming two laterally adjacent circumferential grooves. The pulley is mounted on annular hub 22 by means of bolt 23 fastened by nuts 24. The air cooling attachment 7 consists of a frusto-conical annular section 8 provided with vanes 8*a*, a contiguous sleeve section 9 and the annular bottom portion 14 defining a central aperture 13. The attachment is centered in recess 10 of the pulley by means of peripherally spaced protuberances 19 provided on the surface of sleeve section 9.

Bottom portion 14 of the attachment is provided with spaced apertures 15 to receive fastening bolts 16 for mounting the attachment on the pulley.

The air cooling attachment illustrated in Figs. 3 and 4 operates substantially the same way as that of Figs. 1 and 2. When pulley 17 is rotated, the air current created by the vanes in section 8 of attachment 7 enters through aperture 13 into the air space 18 which is formed between sections 9 and 14 of the attachment and the adjacent pulley wall. The air current will be forced to flow along the walls of the pulley recess 10 on its way out through vanes 8*a*, thus removing heat from the walls.

In addition to being very effective as cooling means for V-belt pulleys, the attachments of the invention can be very economically produced from sheet metal.

While the invention has been described in connection with certain now preferred embodiments, it should be clearly understood that many modifications and variations may occur to those skilled in the art, particularly after benefiting from the present teaching, without departing from the spirit and the scope thereof as defined in the appended claims.

What is claimed is:

1. An air cooling attachment mounted on a V-belt pulley for rotation therewith, the pulley comprising a recessed center portion and a V-shaped peripheral side wall defining a circumferential groove, the attachment comprising a centrally apertured bottom portion adjacent but spaced from the pulley center portion and a frusto-conical peripheral portion adjacent but spaced from the side wall, an annular row of vanes being provided in the frusto-conical portion of the attachment, and means for mounting the attachment on the pulley.

2. The air cooling attachment of claim 1, wherein said attachment is a saucer-shaped vane wheel conforming to the pulley center portion and side wall.

3. The air cooling attachment of claim 1, wherein said attachment is mounted on the pulley by spot-welding the vanes to the side wall of the pulley.

4. The air cooling attachment of claim 1, wherein the attachment is mounted on the pulley by induction-soldering the vanes to the side wall of the pulley.

5. An air cooling attachment mounted on a V-belt pulley for rotation therewith, the pulley comprising a recessed center portion and an at least partially corrugated tubular side wall wherein the corrugations define at least two adjacent V-shaped circumferential grooves, the attachment comprising a centrally apertured bottom portion adjacent but spaced from the pulley center portion, a sleeve portion centered in relation to and spaced from the corrugated tubular side wall of the pulley and a frusto-conical peripheral portion adjacent but spaced from the outermost corrugation, an annular row of vanes being provided in the frusto-conical peripheral portion, and means for mounting the bottom portion of the attachment to the depressed center portion of the pulley.

6. The air cooling attachment of claim 5, comprising peripherally spaced protuberances on said sleeve portion

for centering said portion in relation to the corrugaed tubular side wall of the pulley.

7. Means for air cooling a V-belt pulley comprising at least one pair of peripheral ridges defining a circumferential groove therebetween, said air cooling means consisting of at least one attachment comprising a frustoconical peripheral section carrying an annular row of vanes adjacent one of the ridges for producing an air current flowing past said ridge upon rotation of the pulley and a bottom section having a central aperture, each attachment being mounted on a side wall of said pulley adjacent one of said peripheral ridges for rotation with the pulley, the attachment leaving an air chamber between the pulley side wall and the attachment and said vanes and central aperture communicating with said air chamber.

References Cited in the file of this patent

UNITED STATES PATENTS

2,057,435	Kimble	Oct. 13, 1936
2,248,684	Levy	July 8, 1941
2,265,938	Eksergian	Dec. 9, 1941
2,707,402	Blair	May 3, 1955