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(54) IMPROVEMENTS IN AND RELATING TO THREE-PHASE GENERATORS

(71) We, ROBERT BOSCH GMBH, a German company of Postfach 50, 7000 Stuttgart 1, Federal Republic of Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention is concerned with three-phase generators. A generator is already known which includes a disc on its shaft in addition to an impeller and pulley. However, the outer periphery of this additional disc presses upon the fan impeller and is provided for the purpose of reducing the bending of the fan blades when the generator shaft is rotating at relatively high speeds.

In accordance with the present invention, there is provided a three-phase generator having a drive shaft, a fan impeller carried by the drive shaft, a pulley which is also carried by the drive shaft, and an additional disc which is disposed on the drive shaft between the pulley and the fan impeller, the arrangement being such that the outer periphery of the additional disc does not come into contact with the other elements of the generator carried by the drive shaft.

In comparison with known generators, a generator in accordance with the invention has the advantage that the magnetically excited noise, whose sound pressure level is affected by the mechanical performance of the generator, is sharply reduced, by the presence of the additional disc, during the operation of the three-phase generator. Another advantage is that the additional disc can be placed detachably upon the generator shaft.

The facilities for easy assembly are particularly advantageous, as is the possibility of adapting the additional disc to the specific type of generator and thereby producing an optimum effect. The adaptation is achieved by suitably selecting the values for the diameter, thickness, contact surface on the fan, mass and resilient properties of the additional disc.

The invention is described further hereinafter, by way of example with reference to the accompanying drawings, in which:—

Figures 1a and 1b are front and end views respectively of a disc; and

Figure 2 is a side view of a generator, partially in section, with the disc of Figs. 1a and 1b fitted thereto.

The disc 11 shown in Figs. 1a and 1b has a central hole 12, by means of which the disc 11 can be mounted on a shaft. The disc 11 has, for example, a diameter of 150 mm and a thickness of 1.5 mm and is preferably made of magnetic or non-magnetic sheet steel. Depending upon the type of generator to which it is to be fitted, a different diameter and/or a different thickness are/is used to minimise the magnetically excited generator noise. The disc has a particularly strong noise-reducing effect on generators whose fan impellers are made of cast aluminium.

Figure 2 is a side view of a generator partially in section. A generator shaft 15 protrudes from the generator housing 13 which has retaining arms and swivelling arms 14. A fan impeller 16, the additional disc 11, a pulley 17, a washer 18 and, for retaining the fan impeller/additional disc/pulley arrangement, a nut 19, are attached to the generator shaft 15.

Between its central hole 12 and its external diameter 22, the additional disc 11 abuts against the fan impeller 16 as far as a region 21, the fan impeller being smaller, identical to or rather larger than the outer diameter of the pulley 17, depending upon the type of generator. The additional disc 11 is exposed on both faces in the remaining region between the diameter 21 of the internal region and its outer diameter 22.

WHAT WE CLAIM IS:—

1. A three-phase generator having a drive shaft, a fan impeller carried by the drive shaft, a pulley which is also carried by the drive shaft, and an additional disc which is disposed on the drive shaft between the pulley and the fan impeller, the arrangement being

- such that the outer periphery of the additional disc does not come into contact with the other elements of the generator carried by the drive shaft.
- 5 2. A three-phase generator as claimed in claim 1, in which the additional disc has substantially the same outer diameter as the fan impeller.
- 10 3. A three-phase generator as claimed in claim 1 or 2, in which the additional disc abuts against the fan impeller over a region which is of the order of the diameter of the pulley.
- 15 4. A three-phase generator as claimed in any of the preceding claims, in which the diameter, the thickness and the resilient properties of the additional disc are designed so that the magnetically excited noise is minimised during the operation of the three-phase generator. 20
5. A three-phase generator as claimed in any of the preceding claims, in which the additional disc is made of sheet steel.
6. A three-phase generator substantially as hereinbefore described with reference to the accompanying drawings. 25

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Fig. 1

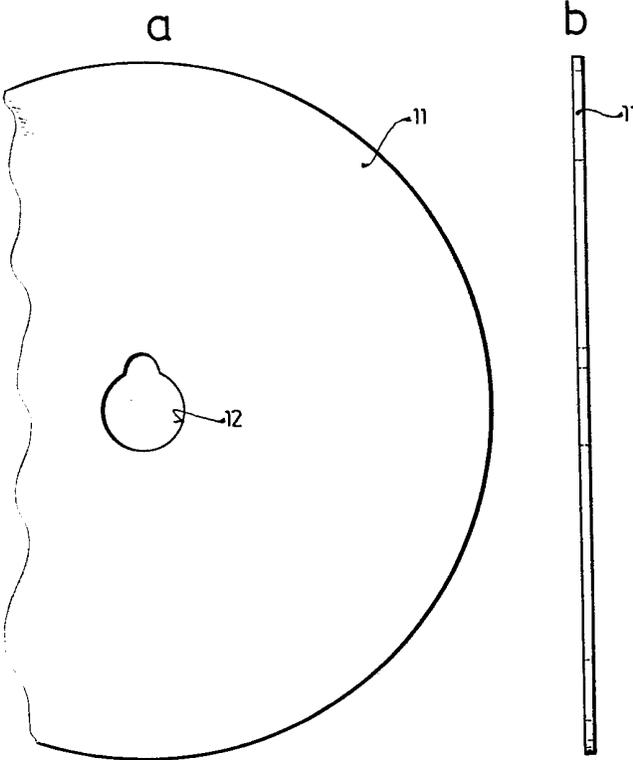


Fig. 2

