PATENT SPECIFICATION 881,138

DRAWINGS ATTACHED.

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International Classification :—F06d.

COMPLETE SPECIFICATION.

Improvements in or relating to Friction Clutch Plate for Motor Vehicles.

We, LANCIA & C. FABBRICA AUTOMOBILI-TORINO S.p.A., an Italian Company, of 27 via V. Lancia, Turin, Italy, 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:—

This invention relates to friction clutch plates, for motor vehicles, of the type comprising resilient coupling means in the form of rubber members interposed between an outer rim carrying the friction lining and a hub.

In known friction clutch plates of this type the rubber of which the coupling members are made is mostly subjected to compression or traction stresses, so that the relative angular movement which can be performed by the hub with respect to the rim is narrowly limited, unless the plates are made of prohibitive size.

An object of this invention is to provide a friction clutch plate affording a considerable relative angular movement of the hub and rim carrying the friction lining under normal operating conditions, so as to satisfactorily damp sharp variations in torque transmitted over the plate.

A further object of this invention is to provide a friction clutch plate which is substantially free from the torsional vibration, during operation, which would normally arise between the plate rim and hub in plates of this type.

A further object of this invention is to provide a friction clutch plate for motor vehicles which is simple and inexpensive in construction.

According to this invention there is provided a friction clutch plate for motor vehicles, comprising, in combination, a flange fast with a hub and provided with radial projections, a rim coaxial with said hub and carrying friction linings, said rim being provided with two flanges formed with recesses adapted to receive the projections on the flange on the hub, two rubber rings interposed between the said flange on the hub and the flanges on the rim, the said projections on the hub flange being embedded in rubber blocks arranged in the said recesses and made integral with the rubber rings, which projections bear on one flank of the said recesses during normal drive and when the engine is under load.

In order that the invention may be more readily understood one embodiment of the same will now be described by way of example and with reference to the accompanying drawings in which:—

Figure 1 is a front view of the friction clutch plate according to this invention showing in detail the position of its component parts when the plate transmits torque;

Figure 2 is a section on the line II—II of Figure 1;

Figures 3 and 4 show front views of two details of Figure 1; and

Figure 5 is a section on line V—V of Figure 4.

The friction clutch plate according to this invention comprises a hub 1 which is internally splined for coupling with the output shaft of the clutch, a rim 2 coaxial with the hub arranged around the latter and carrying friction linings 3 secured thereto by means of rivets 4. The rim is provided with two

axially spaced flanges 5 encircling a single flange 6 of the hub 1. Rubber rings 7 welded to the flanges 5 and integral with a connecting block of rubber 8 encircling the periphery of the hub flange 6 are interposed between the flange 6 and flanges 5. The flanges 5 are secured to the rim 2 by means of rivets 9.

With the above-described arrangement the rubber rings 7 are subjected to shearing stresses only and therefore considerable relative angular movement between the hub 1 and rim 2 is withstood and this results in very satisfactory damping of any sudden variations in torque transmitted through the friction clutch.

Figure 3, which is a front view of the hub and flange, shows clearly that the hub flange 6 is provided with projections 6*a* which extend radially outwardly and are received by corresponding recesses in the rim. The projections 6*a* are embedded in rubber blocks 10, these blocks 10 being integral with the rubber rings 7 accommodated by the said recesses.

The projections 6*a* bear on one flank of the recesses (Figure 1) during normal drive and when the engine is under load, whereby torsional vibrations are avoided which would otherwise arise at a given engine speed if the torque were transmitted by the projections to the side walls of the recesses through the rubber of the said blocks 10 which embed the projections.

Moreover, in order to reduce the specific thrust by the projections on the flanks of the recesses, the projections 6*a* are conveniently made of greater thickness than the flange 6. This thickness of the projections 6*a* is proportioned to the thrust they exert on the flanks of the recesses in the rim 2 and the reaction they receive from said flanks.

Each flange 5 is made of one piece of pressed sheet metal (Figure 4) having an outer annular portion 5*a*, an inner annular portion 5*b* axially offset to the former and a connecting portion 5*c* (Figure 5), the two outer annular portions of both flanges being secured to opposite faces of the rim 2 by means of rivets 9 or alternatively by spot welding.

The outer portions of the two flanges 5 on the rim are formed with regions 5*d* axially outwardly upset, each upset region on one flange being arranged opposite an upset region on the other flange to form together the recesses which accommodate the projections 6*a* on the hub flange and rubber blocks 10. The rim 2 is formed with notches opposite the recesses in the flanges 5, the notch edges being indicated by 2*a*.

The inner edges of the flanges 5 are axially outwardly curved at 5*e* in order to avoid any locally concentrated stresses on the rubber rings.

WHAT WE CLAIM IS:—

1. A friction clutch plate for motor vehicles, comprising, in combination, a flange fast with a hub and provided with radial projections, a rim coaxial with said hub and carrying friction linings, said rim being provided with two flanges formed with recesses adapted to receive the projections on the flange on the hub, two rubber rings interposed between the said flange on the hub and the flanges on the rim, the said projections on the hub flange being embedded in rubber blocks arranged in the said recesses and made integral with the rubber rings, which projections bear on one flank of the said recesses during normal drive and when the engine of the motor vehicle is under load.

2. A plate as claimed in Claim 1, wherein the projections carried by the hub flange are proportioned in axial thickness to the thrust they exert on the flanks of the recesses and reaction they receive from the said flanks.

3. A friction clutch plate substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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Fig. 1

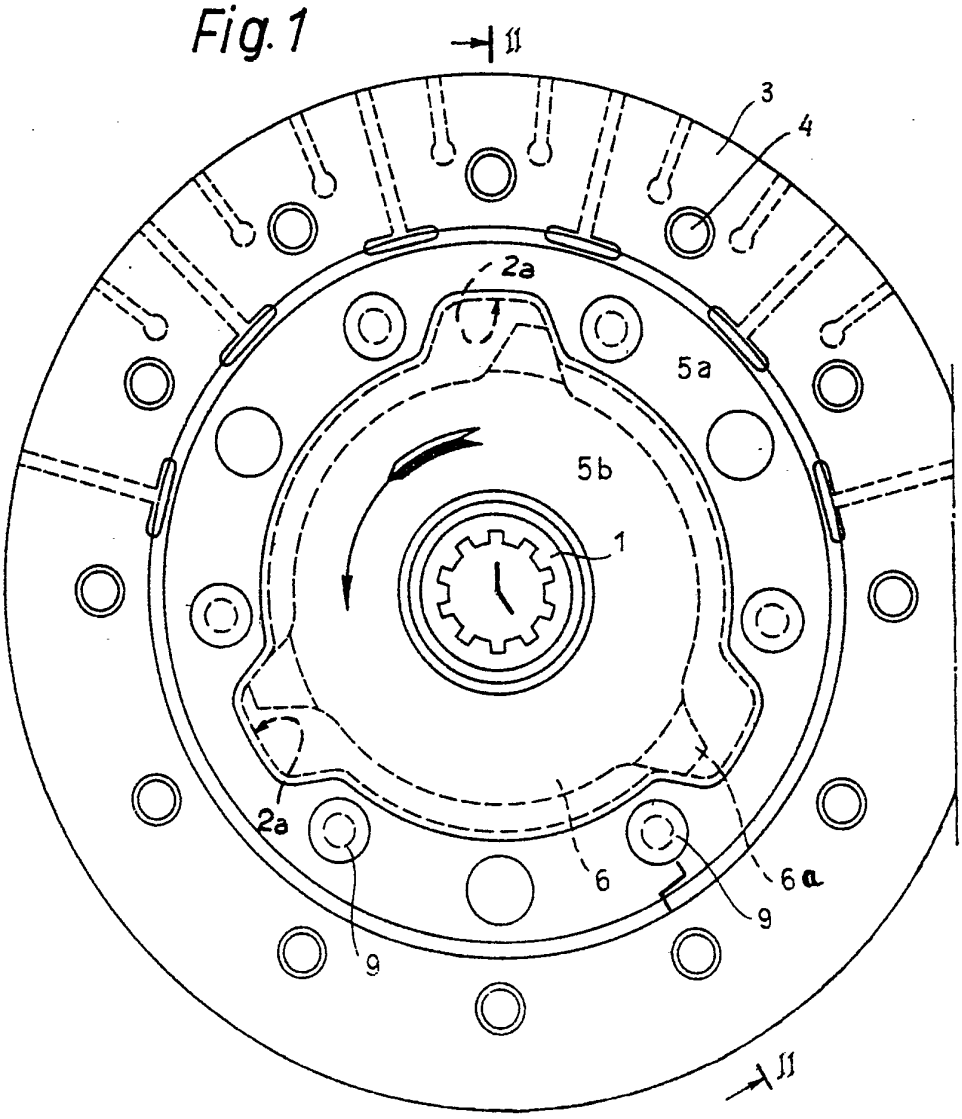
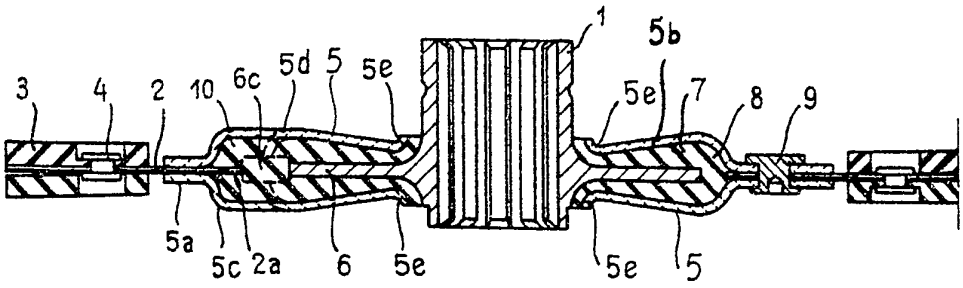

II
3
4
2a
5a
5b
1
2a
6
6a
9
9
II

Fig. 2


1
5b
3
4
2
10
6c
5d
5
5e
5e
7
8
9
5a
5c
2a
6
5e
5e
5

881,138 COMPLETE SPECIFICATION
2 SHEETS

This drawing is a reproduction of the Original on a reduced scale.
SHEETS 1 & 2

Fig. 3

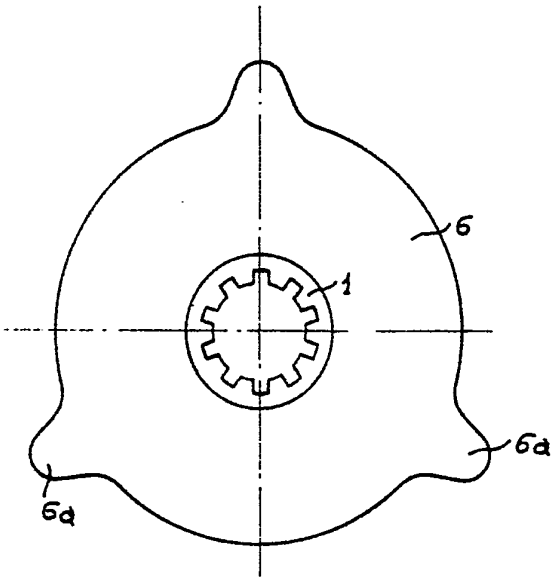


Fig. 4

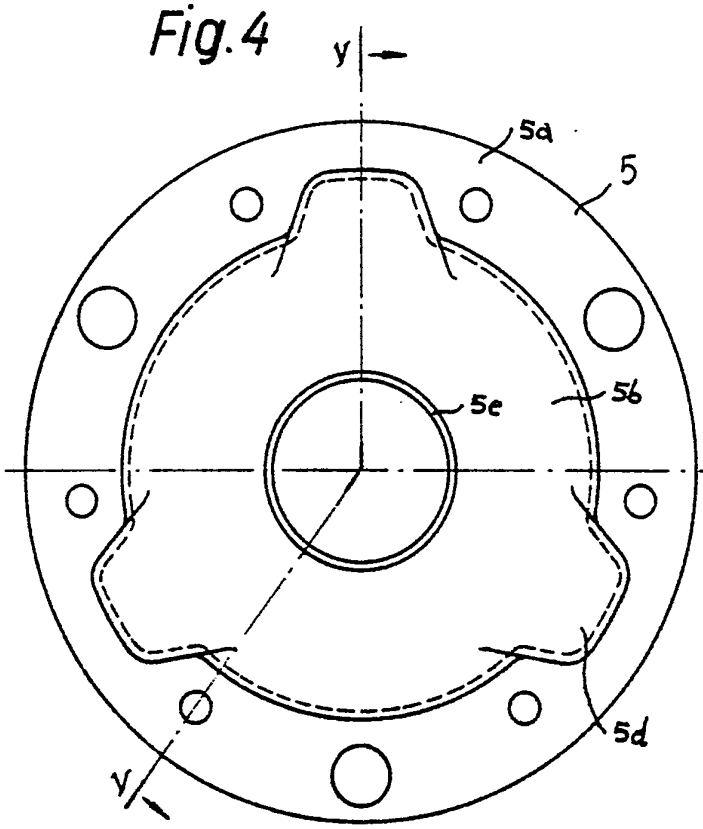


Fig. 5

881,138 COMPLETE SPECIFICATION
2 SHEETS This drawing is a reproduction of the Original on a reduced scale.
SHEETS 1 & 2

Fig. 1

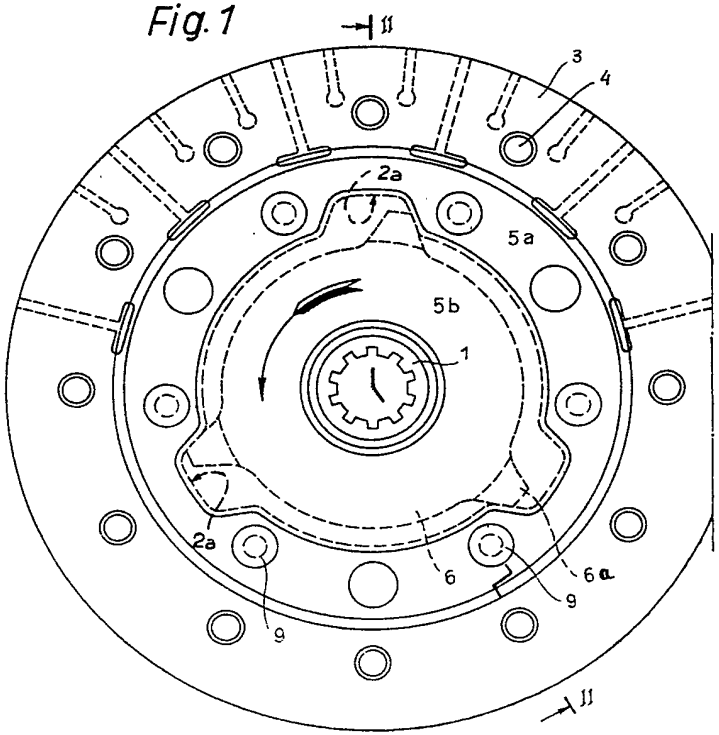


Fig. 2

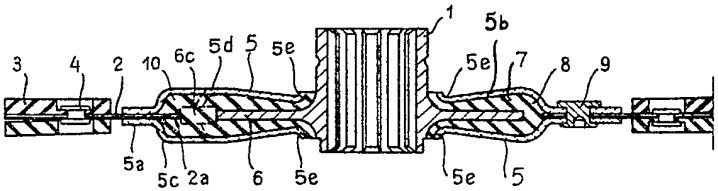


Fig. 3

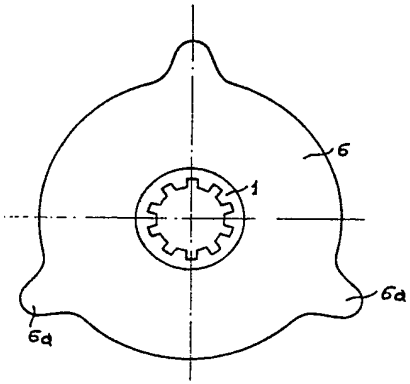


Fig. 4

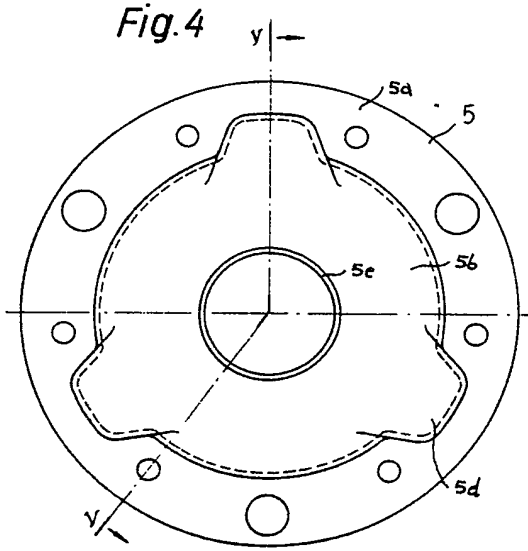


Fig. 5