PATENT SPECIFICATION

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226,826

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Complete Accepted: Aug. 6, 1925.

COMPLETE SPECIFICATION.

Improvements in or relating to Pulleys for T-section Endless Bands.

I, ADOLPHE KÉGRESSE, of 53, rue Balard, Paris, France, a citizen of the Republic of France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Persons skilled in the art know that there are driving pulleys for T-section endless bands with which adherence can be automatically obtained by laterally clamping the vertical part of the T between two parts of the pulley, such clamping being controlled by means of discs provided with inclined surfaces as described in the Specification of Kégresse's Letters Patent No. 199,373. Pulleys of this kind are employed on endless track vehicles and the clamping obtained is proportional to the driving effort, subject, however, to the adherence between the band and the pulley being constant.

The object of the present invention is to provide a new pulley of a type or pattern similar to the one described in the above-mentioned specification but with which clamping of the vertical part of the endless band is governed not only by the driving effort but also by the adherence, such clamping varying in fact both proportionally to the driving effort and inversely proportionally to the adherence. In other words, when, due to extraneous bodies or road particles such as dust, sand, water, mud, snow, *etc.* getting between the endless band and the pulley, the coefficient of adherence is increased or decreased, the clamping of the vertical part of the endless band will be slackened or tightened respectively.

The said result is obtained by means of a special arrangement which is the characteristic feature of the invention and which consists in arranging the friction parts provided with inclined surfaces which bring the two half-pulleys closer to one another in such a way that these parts are influenced by the aforesaid extraneous bodies or road particles which being free to reach the said parts will cause the co-efficient of friction between the said parts to be varied and therefore the clamping effect obtained according to adherence.

In order that the invention may be more clearly understood several embodiments thereof are illustrated, as examples, in the accompanying drawings in which:

Figure 1 is a semi-section and semi-elevation of a pulley designed according to the invention;

Figure 2 similarly shows a modification and

Figure 3 another modification.

In all the figures the same numerals denote the same parts.

1 is the driving shaft of the driving pulley over which runs the T-shaped endless band 2, the central or vertical part of the T which is submitted to variable clamping being denoted by 3.

In the embodiment shown in Figure 1 the effort is transmitted by the shaft 1 to a sleeve 4 keyed thereon. The said sleeve drives a drum 5 on the periphery of which is secured a disc 6 carrying on one face teeth with inclined surfaces which contact with correspondingly shaped teeth on another similar disc 7 fixed against the inside of the half-pulley 8 which is connected by a resilient disc 9 with a secondary hub 10 mounted free on the hub 4.

The second half-pulley 11 is rigidly secured on the secondary hub 10.

Apertures 12 and 13 are provided in the rim of the half-pulley 8 and in the rim of the driving drum 5 respectively.

The purpose of the said apertures is

to permit the introduction between the inclined surfaces of the discs 6 and 7 of extraneous bodies of dust, sand, water, mud, snow, *etc.*, the fine particles of which come into contact with the inclined surfaces, varying thereby the clamping of the vertical part 3 of the endless band.

In fact and as will be easily realised, if the vehicle travels on, say, a dry road, the pulley adherence is great and the clamping should be minimized.

In this case the aforesaid inclined surfaces will remain inoperative, and their resistance to slipping being increased, the result will be a slackened clamping.

On the contrary, if the vehicle is running through water, the pulley contact is lubricated resulting in decreased adherence between the said two parts, but at the same time, water getting in through the apertures 12 and 13 lubricates the said inclined surfaces thereby reducing friction between them and consequently tightening the clamping.

It becomes apparent, therefore, that while permitting a clamping which is proportional to the driving effort since the disc 6 having inclined surfaces is rendered integral with the driving shaft, the pulley constituting the subject matter of the invention provides at the same time a clamping which is inversely proportional to the adherence.

In the modified embodiment shown in Figure 2, on the driving shaft 1 is keyed the hub 4 on which are rigidly mounted the half-pulley 11 and the drum 5 on the periphery of which is mounted the disc with inclined surfaces 6. The corresponding disc with inclined surfaces 7 is carried by the half-pulley 8 which in this case is held and guided as hereinafter described. The drum 5 and the half-pulley 11 are connected by cross-ties 14 which pass through notches or recesses provided for this purpose in the half-pulley 8 and in order that the said half-pulley can be moved towards or away from the half-pulley 11 under the action of the inclined surfaces on the discs 6 and 7 it is made slidable on the said cross-ties and on the outer edge of the drum 5.

As in the embodiment shown in Figure 1, apertures 12 and 13 are provided in the rim of the half-pulley 8 and in the rim of the drum 5 respectively in order to permit admission of road particles or extraneous bodies between the discs 6 and 7 thus automatically maintaining at the desired value the coefficient of friction between the aforesaid inclined surfaces.

In the embodiment shown in Figure 3, rims 15 are provided independent of conical driving cheeks 16 each of which is integral with a drum 17. The said drums are mounted with slight friction on the rim of the driving drums 5 and 5^1 which are rigidly secured to the hub 4 keyed on the shaft 1.

The rims 15 are integral with the discs 6 provided with the inclined surfaces which operate on similar parts 7 carried by the conical cheeks 16. The inner part of these cheeks carries a set of driving teeth which engage between the cross-ties 14 that connect the two driving drums 5 and 5^1.

Between the discs 6 secured to the rims 15 and the outer cheeks of the drums 5 and 5^1 are arranged thrust washers 18 made of any suitable material.

The operation is as follows: As soon as there is a tendency to slip, the rims 15, on which rests the endless band, and consequently also the inclined surfaces on the discs 6 integral with the said rims are late with respect to the inclined surfaces on the discs 7 secured to the conical driving cheeks 16, thereby producing the required tightening. Road particles or various extraneous bodies getting in also, as in the preceding cases through appropriate apertures 15^a, 17^a, between the friction parts (inclined surfaces on discs 6 and 7 and thrust washers 18) the tightening obtained is obviously inversely proportional to the adherence.

It is to be clearly understood that the above-described embodiments are given merely as examples and that any constructional modifications may be made without departing from the scope of the invention.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A driving pulley for T-section endless bands with variable automatic clamping of two half-pulleys on the vertical part of the T, essentially characterised by the fact that the friction parts (inclined surfaces) causing clamping are so arranged as to permit free admission between the said friction parts of extraneous bodies or road particles (dust, sand, water, mud, snow, *etc.*) in order to cause the coefficient of friction between said parts to vary according to the nature of the ground travelled over and thus to obtain a clamping not only proportional to the driving effort but also inversely proportional to the adherence.

2. A pulley as claimed in Claim 1, in which the automatic clamping device is disposed at the periphery of the pulley, and comprises two sets of co-operating inclined surfaces, one set being integral

with a drum which is rigidly secured to the hub and the other set secured to the inner face of the cheek of one of the half-pulleys which is resiliently mounted on the hub of the pulley.

3. A pulley as claimed in Claim 2, in which the said half-pulley is mounted on the hub by means of a resilient disc and a secondary hub.

4. A modification of the pulley claimed in Claim 2, characterised in that each half-pulley is provided with a rim which is independent of the corresponding cheek, the latter being driven directly by the hub and connected to one set of the inclined surfaces, the other set of said surfaces being fixed to said rim, and the said rim being adapted to slip circumferentially of the pulley.

5. A driving pulley for T-section endless bands substantially as described or substantially as illustrated in Figure 1 or in Figure 2 or in Figure 3 of the accompanying drawings.

Dated this 24th day of December, 1924.

ADOLPHE KÉGRESSE.

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Chartered Patent Agents.

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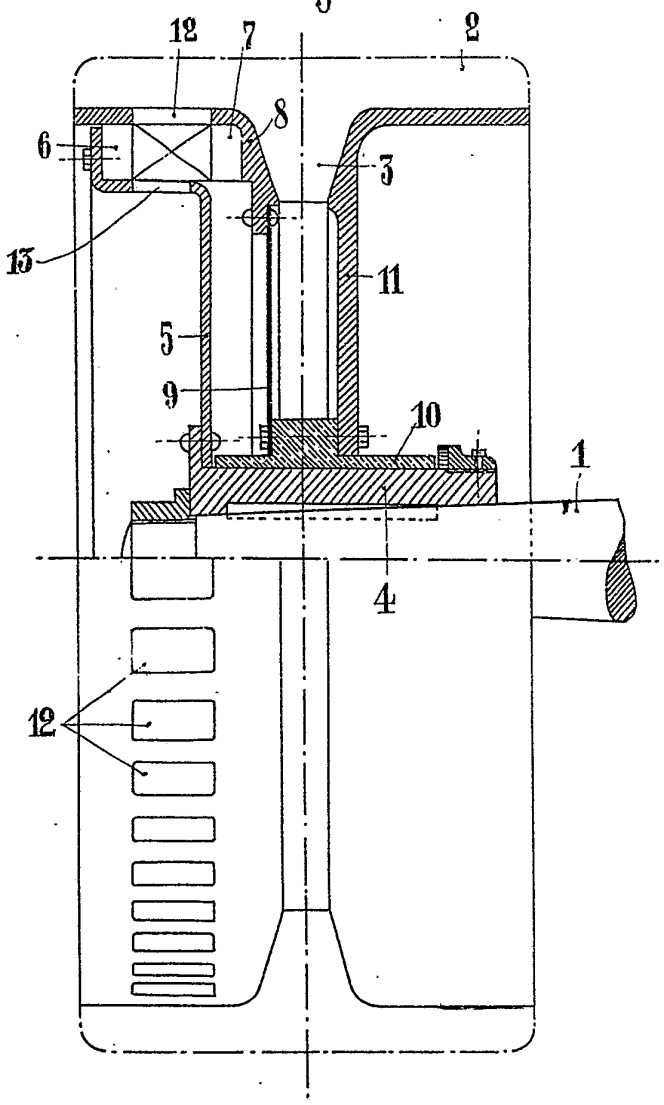
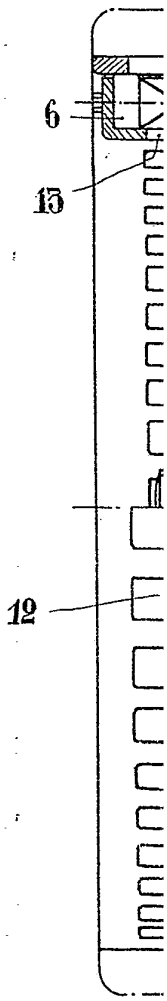
SHEET 1

[This Drawing is a reproduction of the Original on a reduced scale]

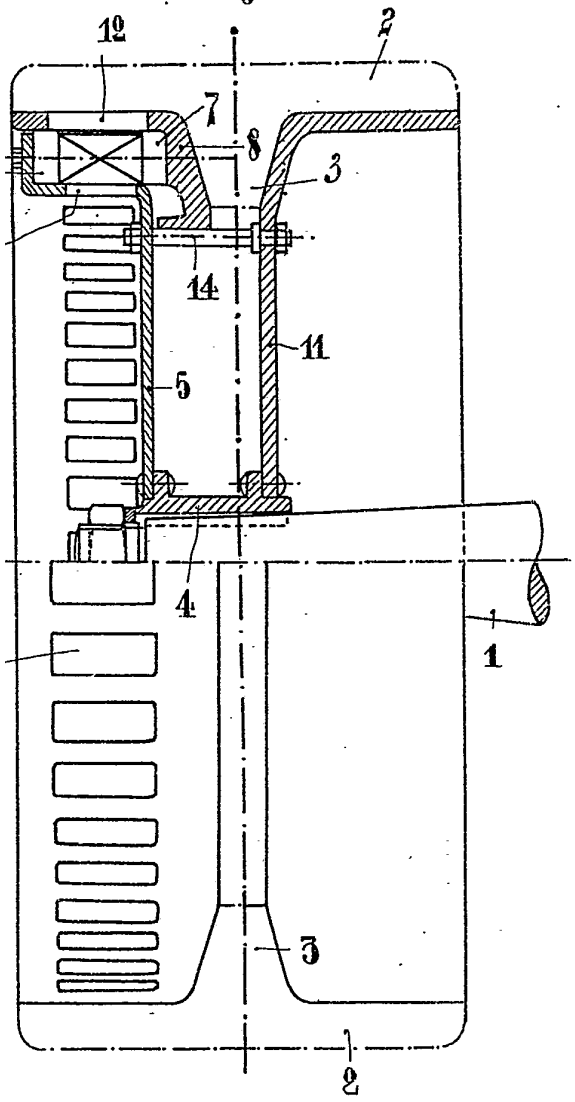
Fig.1.





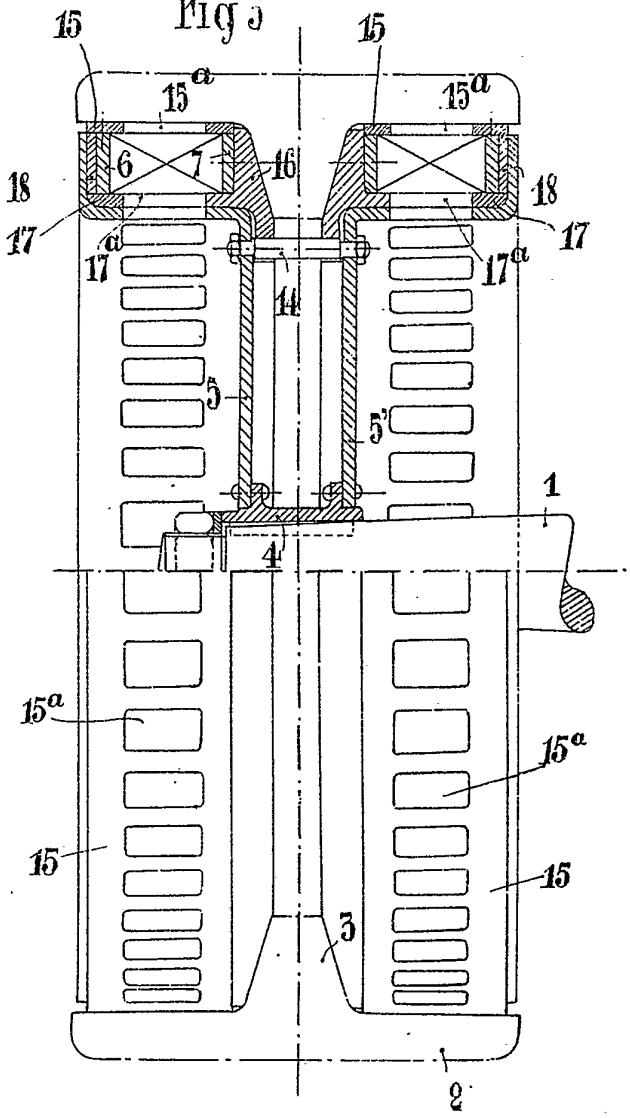
SHEET 2

Fig. 2



SHEET 3

Fig 3



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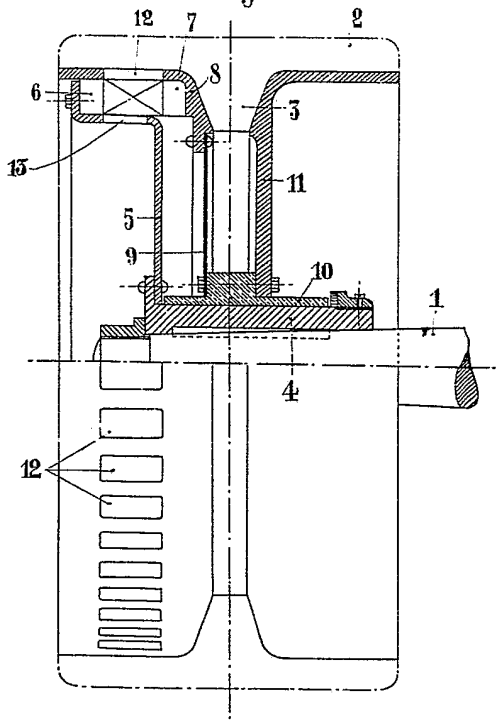
226,826 COMPLETE SPECIFICATION

3 SHEETS

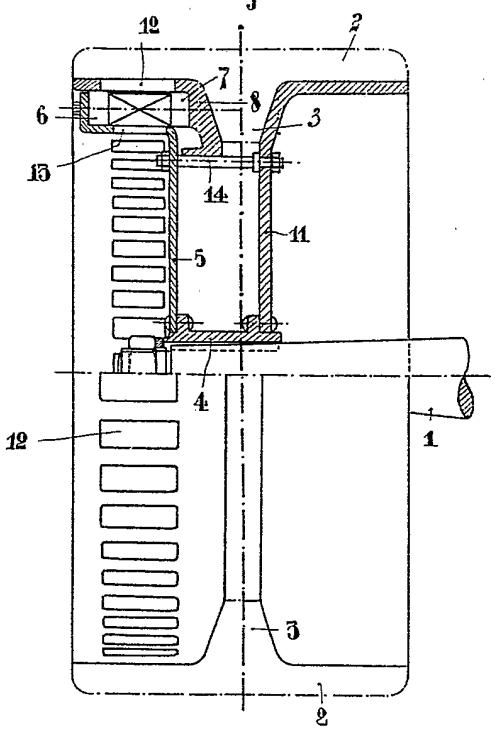
SHEET 1

Fig.1.



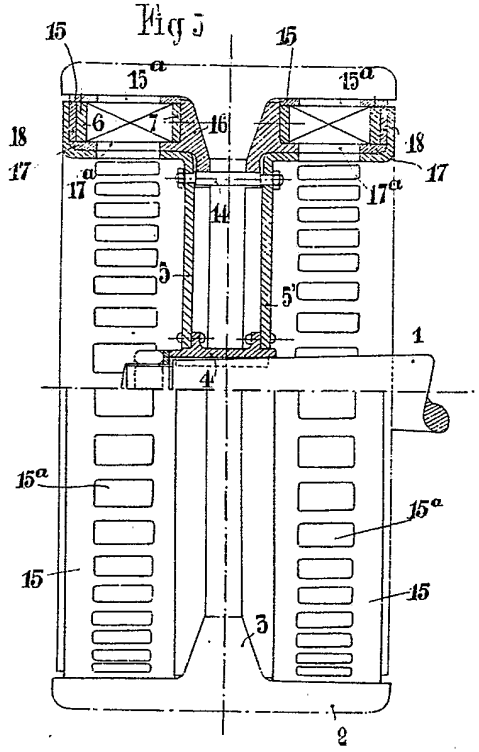
SHEET 2

Fig.2



SHEET 3

Fig 3



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