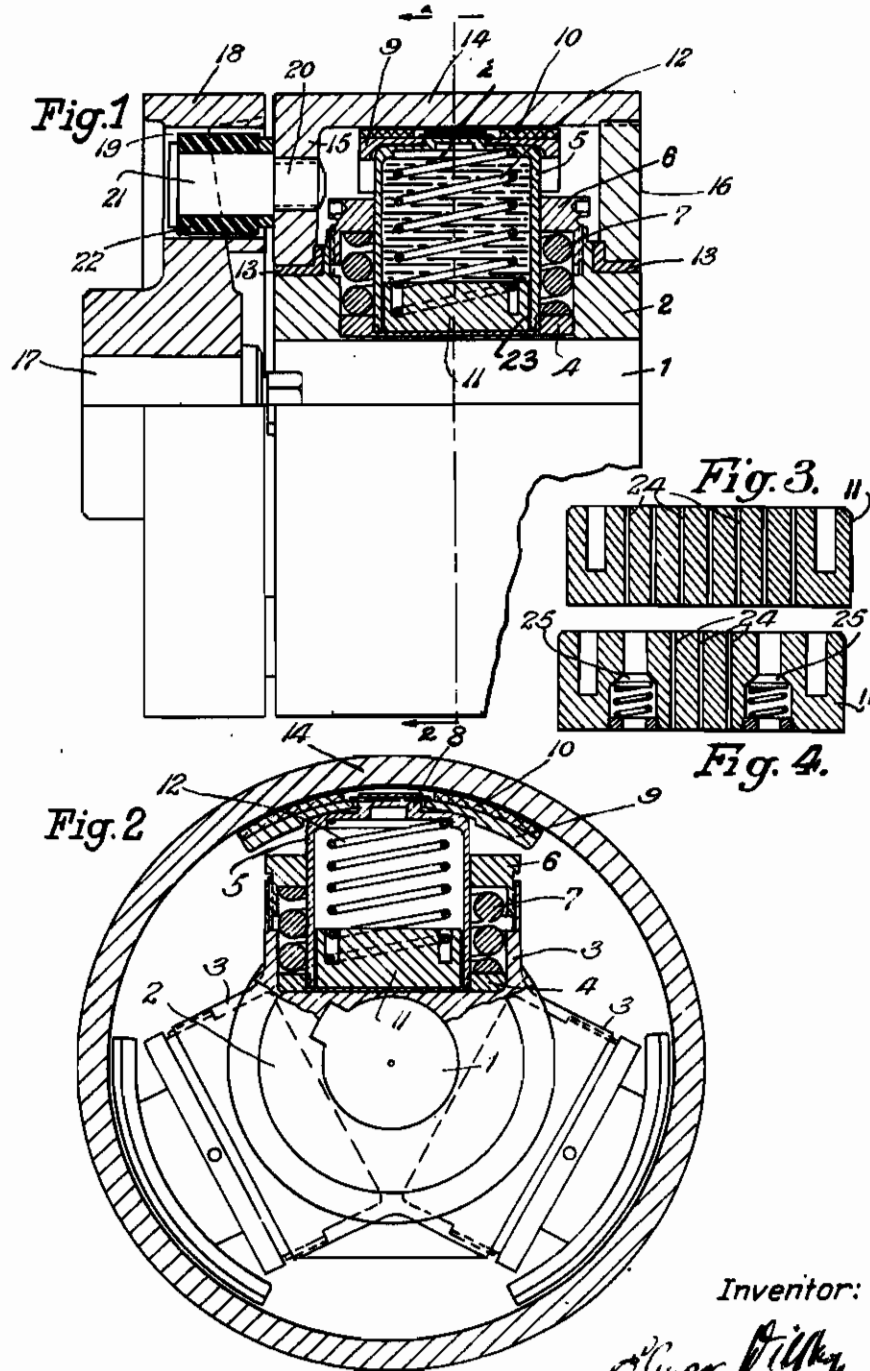


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CENTRIFUGAL COUPLINGS
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CENTRIFUGAL COUPLINGS

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My invention relates to a centrifugal coupling equipped with hollow cylinders constituting the centrifugal bodies which are arranged and combined with certain other members in such a manner that certain drawbacks from which the known centrifugal couplings suffer are obviated. This is effected by arranging said hollow cylinders which are subjected to the action of adjustable springs acting counter to the centrifugal force, in such a manner, that they are axially radially shiftable and that their outer frontal surface is so designed as to form a pressure-transmitting surface able to transmit the turning moment. It is very well possible to design this arrangement and combination of parts in such a manner that besides the said hollow cylinders separate bodies connected with them and being movable to all sides are used whereby it is rendered possible to give the said cylinders and, thus, also the pistons a particularly great length, as well as a particularly large diameter, which entails the useful effect that comparatively great turning moments can be transmitted in spite of the bulk of the coupling being exceedingly small. Owing to the provision of said springs which act counter to the centrifugal force it is rendered possible to exert an influence upon the temporal course of the coupling procedure by giving the springs a higher or lower preliminary tension. Finally, owing to the pressure-transmitting surfaces being movable, the possibility is afforded to accommodate the coupling largely to irregularities, and first of all it is warranted that all hollow cylinders contribute equally to the transmission of the performance.

The invention is illustrated diagrammatically and by way of example on the accompanying drawing on which Figure 1 is a side-view of a centrifugal coupling designed according to this invention, the upper half of the figure being drawn as an axial middle section, whereas Figure 2 is a frontal view, likewise partly in section.

Referring to these Figs., 1 denotes the motor shaft to which is keyed the hub 2 that is provided with three cavities arranged in star-like manner and containing each a cylinder 3. These cylinders form in their entirety the one part of the centrifugal bodies of the coupling, whereas the other part is formed by pistons 4 arranged in said cylinders. Both parts are radially movable independently from one another so that when the respective machine or engine is starting they tend to travel outwardly. This tendency is, however, counteracted by several forces, viz: the cylinders 3 are continually subjected to the action of springs 5 which may be given, with the aid of the nuts 6, the preliminary tension requisite in every case. This tension is so chosen that the cylinders remain in equilibrium when the machine or engine is starting. With the pistons 4 it is the damping material (oil or the like) filling the cylinders and counteracting the free outwardly

directed movement of the pistons 4. In order to provide for the shifting of the pistons taking place with such reduced speed as is desired at the time being, the sectional area of the throttling passages through which the braking mediums must be pressed is appropriately chosen. There is, for this purpose, either every piston provided with a plurality of fine longitudinal bores or a certain narrow gap is left between the oppositely located surfaces of every piston and the appertaining cylinder, as is shown in the Figs. By arranging a non-return valve in a channel of the piston 4 it is in every case possible to provide for the pistons moving outwardly with the desired slow speed, but moving inwardly with the desired increased speed as the sectional area through which the oil etc. is to pass is suitably large. Comparatively weak springs 7 hold the pistons when they are in their position of rest always in their inner end position. The cylinders 9 are provided at their outer ends with segments 8 bearing a suitable friction covering 9 and serving to take along with them the coupling bodies connected with the shaft 10 to be driven. Said segments are not rigidly connected with the cylinders but are movable to all sides so as to be able to contact with them on their entire surface. The body effecting the connection with said shaft is designed as a ring 11 turnably supported on the hub 2 and contacting with the sliding bearings 12, and surrounding the cylinders 3, or their segments respectively, in a certain distance thereof.

When the motor has been started it attains its full number of revolutions, say 1500 per minute, in a very short time. The cylinders 3 and the pistons 4, which both are radially movable on the hub 2 are, therefore, practically at once subjected to the action of the centrifugal force which tends to fling them outwardly. While the cylinders 3 are at first kept in equilibrium by means of the springs 5, the pistons 4 can slowly travel outwardly and press the braking medium to their rear side through the throttling passages. The pressure exerted during that time upon the outer surface of the cylinders 3 by the intermediary of the braking medium causes the cylinders likewise to move outwardly until they contact with the segments 8. There arises at first a certain sliding friction whereby, however, while the operation is going on, the ring 11 and thus also the shaft 10 are being taken along with by the segments, in consequence whereof finally the entire performance is transmitted. This comparatively short delay during the coupling procedure is sufficient to obviate such knock-like strains as have hitherto been experienced with the known centrifugal couplings whereby also the detrimental premature destruction of the machine or engine parts concerned is obviated.

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