

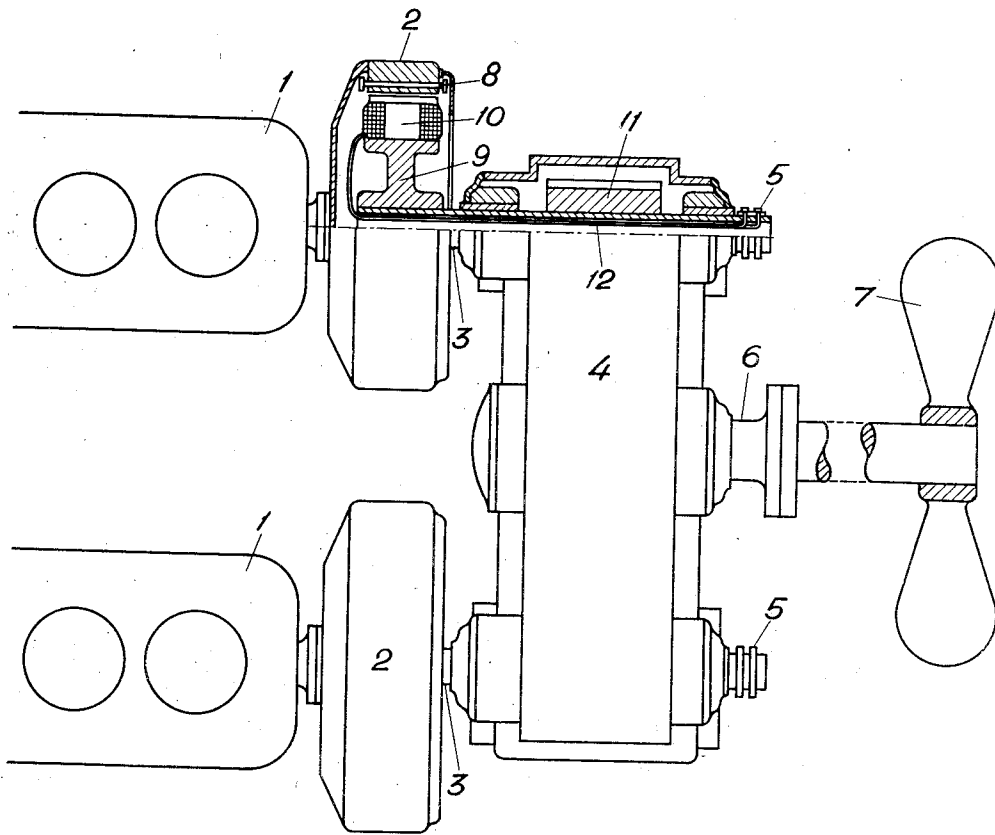
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ELECTRODYNAMIC SLIP COUPLING

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ELECTRODYNAMIC SLIP COUPLING

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Means for driving ships by combustion engines are known, in which slip couplings and a speed reducing gear are interposed between the engines and the propeller, and more particularly in which the slip couplings consist of two members each, one of said members having magnetic poles and the other carrying a short-circuited winding of an alternating current type and being separated from the former by an air gap. When a slight slip occurs between the coupling members, currents are induced in the short-circuited winding which together with the magnetic field form a torque enabling the coupling to transmit power.

The two coupling members should be fixed on free-hanging shaft ends in order to permit, not only a mutual axial displacement but also, to a lesser degree, a mutual radial displacement or oblique position between the coupling members caused by deformations in the ship's hull. In this case, it is important that the free shaft ends are made as short as possible, especially if the coupling is employed for comparatively high speeds, since the critical speed is inversely proportional to the square root of the linear deflection, and the latter is in its turn proportional to the third power of the free length to the center of gravity of the load. In couplings of the kind referred to, the deflection not only depends on gravity but also on the unbalanced magnetic pull, which by reason of deformations in the hull and an eccentric mutual position of the two coupling members caused thereby may affect the members as much as gravity or even more.

In order to reduce as far as possible the free length of the shafts supporting the coupling members, at least one set of sliprings for supplying current to the coupling is, according to the present invention, placed on the remote side of the gearing, counted from the coupling, and connected to the coupling member by conductors traversing a bore in a shaft common to the coupling member and a pinion in the gearing. As a rule, the said coupling member is that carrying the magnetic poles, as this member always requires a supply of current. However, if the coupling member carrying an alternating current winding is provided with accessible current terminals for making a regulation of the current and thereby of the slip possible, the coupling member may be placed on the pinion shaft. The sliprings of the coupling member mounted on the shaft of the engine, if such exist, are as a rule mounted between the engine and the cou-

pling, as it is hardly possible to draw the conductors through a crank shaft. If the engine consists of a turbine, the sliprings may be placed on the remote side thereof.

A form of the invention is illustrated in a plan view, partly in section, in the accompanying drawing.

Referring to the drawing, 1, 1 are the two engines which are only shown in part. The shafts thereof carry the external coupling members 2, 2, each of which has a winding which is, however, only shown at 8 for the coupling shown in section. The internal coupling members 9 carry magnetic poles 10 and are mounted on the free ends of the shafts 3 carrying also the pinions 11 of the gearing 4. The sliprings 5, 5 for supplying current to the windings of the poles 10 are mounted on the remote ends of the shafts 3 and connected to the windings by conductors 12 traversing bores in the shafts 3. In this way, the shaft ends carrying the coupling members can be made as short as possible. The total axial length of the installation is also reduced, and the sliprings will be more easily accessible for inspection. The outgoing shaft 6 of the gearing is connected to the propeller 7.

I claim as my invention:—

1. A driving mechanism comprising a driving member, a reducing gear, and an electric slip coupling connecting said member and gear, a pinion for said reducing gear, a hollow shaft carrying said pinion and having both its ends projecting beyond said reducing gear, one element of said coupling being carried in close proximity to the reducing gear on one of said projecting ends, electric contact members on the other projecting end, and leads extending through said hollow shaft from the said contact members to said coupling member to supply electric current thereto.

2. A driving mechanism comprising a driving member, reducing gear, and an electric slip coupling, a pinion for said reducing gear, a hollow shaft carrying said pinion, a bearing for said shaft on each side of said pinion, the ends of said shaft projecting beyond said bearings, one of said projecting ends carrying an element of said coupling, slip rings on the projecting shaft end remote from the said coupling outside the bearing, and leads extending through the reducing gear from said rings to the coupling to supply electric current thereto.

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