

★★★ <第34回知的財産翻訳検定試験【第18回和文英訳】> ★★★
《 1 級課題 -機械工学- 》

【問 1】

[0002] Pedestrians and drivers of vehicles traveling along roads are often provided with visual indicators in the form of road surface markings, which are white lines and so forth formed on road surfaces.

[0003] Regarding such road surface markings, Patent Literature 1, for example, discloses a road surface marking paint including a synthetic resin solution or liquid dispersion, and a filler. A road surface is coated with the road surface marking paint, upon which a retroreflective material such as glass beads or the like is dispensed, following which the paint is dried, thereby forming a coating layer.

[0007] With road surface markings formed by coating the road surface with road surface marking paint such as described in Patent Literature 1 to 3, the coating layer of road surface marking paint is readily lost due to friction from contact with pedestrians and vehicles. Accordingly, maintenance needs to be periodically performed to recoat the road surface with the retroreflective material (glass beads, etc.) and the road surface marking paint, in order to maintain the road surface markings. Once maintenance is started, lengthy traffic restrictions have to be imposed. Accordingly, there has been demand for a technique for applying road surface markings that requires less frequent maintenance.

[0008] Now, it is conceivable to apply the road surface marking paint more thickly at this time, so that the road surface markings are lost less readily from contact with pedestrians and vehicles. However, thickly applying the road surface marking paint increases the force that the lower side of the road surface markings in particular is subjected to from contact with pedestrians and vehicles. Accordingly, the road surface markings easily become detached from the road surface due to peeling away therefrom.

【問 2】

[0014] Now according to the present invention, in order to perform backlash adjustment in the geartrain of the reduction gear device 6 described above, the reference face 8b is provided in the gearbox 8, with the intermediate gear assembly 20 being disposed to be capable of sliding displacement over this reference face 8b before fixation thereto, as described above. Also, later-described recesses 18 and 34 are bored in apices of the input and intermediate shafts 14 and 26 of both the input gear assembly 10 and the intermediate gear assembly 20, along substantially axial centers thereof.

[0015] Furthermore, a simple jig is used in order to perform backlash adjustment in the geartrain in the present invention. This jig is formed as a restraining jig 50 that fixes and restrains a distance L between a center axial line of the input shaft 14 of the input gear assembly 10 and a center axial line of the intermediate shaft 26 of the intermediate gear assembly 20, and includes a rod-like portion 52, and engaging pins 54 and 56 protruding from both ends of the rod-like portion 52, as illustrated in Figs. 2 to 4. The restraining jig 50 is designed and fabricated such that the center-to-center distance L of both engaging pins 54 and 56 on the rod-like portion 52 is substantially equal to the sum of pitch circle radii of both gears, namely, the input gear 16 and the first-stage gear 22 of the intermediate gear assembly 20. Engaging both engaging pins 54 and 56 of the restraining jig 50 with the aforementioned recesses 18 and 34 bored in the apices of the input and intermediate shafts 14 and 26 of both the above-described input gear assembly 10 and intermediate gear assembly 20 enables the distance between both gears 16 and 22 to be restrained. Obviously, similar restraining effects can be achieved through a configuration in which pin-like protrusions that are equivalent to both pins 54 and 56 of the restraining jig 50 are formed on the distal ends of the input shaft 14 and the intermediate shaft 26, while recesses that are equivalent to the recesses 18 and 34 are provided at both ends of the rod-like portion 52 of the restraining jig 50, as a matter of course.

Translator's note: “減速ギア装置10” in paragraph [0014] probably should be “減速ギア装置6”, and has been corrected accordingly.

【問 3】

1. A sealing device (A) comprising:

first and second annular sealing plates (1, 2) respectively attached to a rotating side inner member (11) and a static side outer member (12) in an annular space between the rotating side inner member (11) and the static side outer member (12); and

a seal lip, wherein

the two annular sealing plates (1, 2) include respective vertical plate portions (1a, 2a) and respective cylindrical portions (1b, 2b) formed in respective L-shapes in cross section opposed one another, and the cylindrical portions (1b, 2b) of the two annular sealing plates (1, 2) are respectively fitted to the rotating side inner member (11) and the static side outer member (12),

the first annular sealing plate (1) includes the vertical plate portion (1a) positioned axially outer side thereof, and the vertical plate portion (1a) of the first annular sealing plate (1) has a distal end opposed to the cylindrical portion (2b) of the second annular sealing plate (2) with a clearance in a radial direction,

the second annular sealing plate (2) is in sliding contact with an inner side surface of the vertical plate portion (1a) of the first annular sealing plate (1) having a flat shape, and includes a side lip (3a) inclined radially outward toward a tip of the side lip (3a) and radial lips (3b, 3c) in sliding contact with the cylindrical portion (1b) of the first annular sealing plates (1), and

the annular sealing plate (1) is a magnetic steel plate and includes an elastomer mixed with magnetic powder vulcanized and bonded to an outer side of the vertical plate portion (1a) in a circumferential manner, and alternating magnetic poles formed in the elastomer.