★★★ ＜第28回知的財産翻訳検定試験【第15回和文英訳】＞ ★★★
≪１級課題 -機械工学-≫

【問 1】

[0003] However, air resistance is not negligible even for objects with smooth surfaces, adversely affecting fuel efficiency, acceleration, maximum speed, stability, and so forth, of the transportation objects exemplified above. The issue of fuel efficiency, in particular, has a direct bearing on the problem of energy resources, as well as environmental issues such as pollution, acid rain, global warming, and so forth, and is of increasing importance given the recent increase in energy consumed for transportation purposes. Also, objects flying at extremely high speeds face the problem of heat generated by friction with air (aerodynamic heating). For example, the Space Shuttle reaches speeds of 7.6 km per second upon reentry to the atmosphere, resulting in surface temperatures of 1400 degrees Celsius or higher at places, due to frictional heat. Accordingly, the difficulty in developing heat-resistant materials and thermal insulation structures presents a great challenge. There are expectations for new ideas in the years to come regarding durability and so forth, which will arrive none too soon.

[0004] It is an object of the present invention to solve the above problems and provide an innovative fluid resistance-reducing structure for the surface of objects that will yield breakthrough revolutionary technology in which, founded on a new hydrodynamic theory,

fluid resistance at the surface of an object can be reduced as compared to a case where the surface thereof is smooth,

fuel efficiency, acceleration, maximum speed, stability, and so forth, can be improved in all sorts of objects for transportation, for example,

energy conservation and endeavors to improve environmental issues can be undertaken on a global scale in particular,

frictional heat and various types of parasitic drag can be reduced in objects flying at high speeds, to improve durability, costs, and so forth, of heat-resistance materials and thermal insulation structures,

and so forth.

【問 2】

Next, each bell-shaped core 1 was placed at a predetermined position in a cavity within a mold for a final hollow molded product, as illustrated in Fig. 2.

The mold is made up of three mold sections, which are a mold section A denoted by 20 in Fig. 2, a mold section B denoted by 30, and a mold section C denoted by 40. The mold sections respectively have protruding portions 22 and 23, protruding portions 32 and 33, and a protruding portion 41.

In particular, the protruding portion 22 of the mold section A and the protruding portion 32 of the mold section B come into contact with the upper protruding portion 11 of the core 1. The protruding portion 23 of the mold section A and the protruding portion 33 of the mold section B come into contact within the through hole 12 of the core 1, but are spaced apart from the inner walls of the core 1. Further, the protruding portion 41 of the mold section C is inserted into the recess 13 of the core 1, thereby positioning the core 1 at the predetermined position within the mold cavity.

Injection molding was performed by injecting shell resin (B) 5 around the core 1 disposed in the mold from an injection port 21 illustrated in Fig. 2 at the aforementioned injection molding temperature (320 degrees Celsius), and cooling, thereby yielding a molded article integrally containing a core.

Good: No cracks or fissures visibly observable in the shell resin (no deformation of the core, yielding a molded article integrally containing a core).
Fair: Cracks and/or fissures visibly observable in the shell resin (core was slightly deformed at time of injection molding of the resin (B)).
Poor: Marked cracks and/or fissures visibly observable in the shell resin (core was significantly deformed at time of injection molding of the resin (B)).

【問 3】

1. A simplified zoom lens mechanism comprising:

a lens barrel that includes fixed lens groups and two moving lens groups, the fixed lens groups being disposed on both ends along an optical axis L, the two moving lens groups being disposed between the fixed lens groups, one of the moving lens groups being a zoom moving lens group configured to vary a photographing magnification of a photographed subject, the other moving lens group being a focus moving lens group configured to adjust a focal point, each of the two moving lens groups being movable along the optical axis L;

an active shaft 5 and a passive shaft 6 each disposed in a peripheral area centered at the optical axis L so as to be parallel to the optical axis L;

an active body 8 slidably fitted with the active shaft 5 by insertion, the active body 8 being integrated with a lens frame of the focus moving lens group 4; and

a passive body 9 slidably fitted with the passive shaft 6 by insertion, the passive body 9 being integrated with a lens frame of the zoom moving lens group 3, wherein

the passive body 9 on the passive shaft 6 is drivable by driving the active body 8 on the active shaft 5 so as to cause the zoom moving lens group 3 and the focus moving lens group 4 to move along the optical axis L.