

問 1

[0002]

In a bicycle parking, there are bicycle parking apparatuses for locking bicycles. A conventional bicycle parking apparatus includes a set of openable arms for locking a wheel of a bicycle above the ground. The arms are closed with a spring when not being used. When the user of a bicycle uses the bicycle parking apparatus to lock the bicycle, the user pushes the arms with the front wheel of the bicycle to open the arms. The front wheel then comes in contact with a contact board, which activates a switch for closing the arms with the spring. The front wheel is locked in this way. In another conventional bicycle parking apparatus, the front wheel of a bicycle is placed on the parking position to press down the contact board engaged with the openable arms, which closes the arms to hold the front wheel.

[0003]

To accept various types of bicycles with different wheels in diameter or width and not to damage bicycles or others' properties, the openable arms are designed to have some play in a bicycle parking apparatus. Due to the play of the arms, if a front wheel is slanted or not placed in a right position, the bicycle may not be locked properly.

問 2

In the method for spraying fuel with the liquid spray valve including a valve seat 10 having the valve seat surface 10a in the middle of the liquid passage, the valve element 8 configured to come in contact with the valve seat surface 10a to close the liquid passage and separate from the valve seat surface 10a to open the liquid passage, the nozzle plate 11 disposed downstream of the valve seat 10 and having a plurality of nozzles 12, the flow through and immediately downstream of the nozzles is converted to a substantially liquid film flow, as described. The jet streams 30 and 31 from the nozzles 12 do not necessarily flow in the axial direction of the nozzles 12 and do not necessarily cross with each other downstream. After the jet streams 30 and 31 from the nozzles 12 become sprays downstream and the sprays come close to each other into substantially one solid cone due to Coanda effect between the sprays, the solid cone causes entrainment of

ambient air based on the momentum theory of spray and generates the air flow in the downstream direction of a certain area of the sprays. Until these behaviors become substantially unobservable, the injection quantity distribution is continuously peaked substantially at the center and the angle of spray is continuously restricted, which enables the atomization of fuel spray as well as improves the designing flexibility in spray shaping, spray patterning, and injection quantity distribution. It is obvious that the injection quantity distribution is not necessarily peaked substantially at the center of the cross-sectional area of the spray and the angle of spray is not necessarily as small as possible. It is also obvious that the nozzle plate 11 integrally formed with the valve seat 10 can achieve similar effects.

コメント

- ・ 1 行目"fuel"入れました。
- ・ 参照符号"12, 12"は"12"に統一しました。

問 3

1. A refill (2) for a ballpoint pen (2) comprising:

a first cylindrical part (3) having an outer surface (5) adjacent to a rear end (50),

an elastic second cylindrical part (4) having an inner surface (6) disposed around the outer surface (5), and

ink (7) filled in the space formed by the first cylindrical part (3) and the inner surface (6),

wherein the outer surface (5) includes:

a first slanted portion (51) having an increasing outer diameter with distance from the rear end,

a first annular portion (52) continuous with the first slanted portion (51),

a second slanted portion (53) continuous with the first annular portion (52) and having a decreasing outer diameter with distance from the rear end,

an annular recess (54) continuous with the second slanted portion (53),

a third slanted portion (55) continuous with the annular recess (54) and having an increasing outer diameter with distance from the

rear end, and

a second annular portion (56) continuous with the third slanted portion (55) and having a constant outer diameter,

wherein the inner surface (6) has an inner diameter larger than the annular recess (54) and smaller than the outer diameter of the second annular portion (56) before being assembled, and

wherein the first annular portion (52) has an outer diameter larger than the outer diameter of the second annular portion (56).