

1

3,074,800

WRITING OR PAINTING SUBSTANCE FOR BALL POINT PENS AND SIMILAR DEVICES

Werner Germann, Lugano-Viganello, Switzerland, assignor to Doleo S.A., Lugano, Switzerland

No Drawing. Filed Aug. 3, 1959, Ser. No. 831,055

Claims priority, application Switzerland Aug. 8, 1958

4 Claims. (Cl. 106—22)

The invention relates to a writing or painting substance for ball point pens or the like. Such devices comprise a reservoir for the writing substance, the aperture of the reservoir being closed by a ball which when rotated allows just enough writing substance to pass through as is used for writing. Such devices are usually used for writing but can also be used as a lipstick or to apply cosmetics or mascara.

As writing substance there is used not only liquid ink but also plastic or even solid pastes.

It has been found that the known writing agents, whether liquid or solid or thixotropic, may flow out of the ball point when the pen is not in use and cause soiling. Also, an uneven thick writing is produced. Plastic thixotropic inks are, it is true, so solid in the static state that they cannot flow but, when the pen is used, they become more liquid and remain liquid for a considerable time after writing before returning to their original solid state. Such inks therefore behave like liquid inks during writing and for some time thereafter and may therefore issue from the ball point when not required.

The invention has as its subject matter a substance free from the disadvantages described. A main feature of the writing or painting substance according to the invention is that it includes undissolved microscopic particles of less than 0.02μ which have been so mixed with wax that at normal temperature the substance has a plastically strong solidity which is reduced upon engagement with the moving ball, although the substance remains sufficiently solid to maintain a writing layer of appreciable residual consistency between the ball and its seating during writing but returns to its original plastic solidity as soon as the ball ceases to be operated.

According to the invention, the substance is so solid even while the ball is in operation during writing as not to be driven back by the pressure produced during writing between the ball and its seating. The substance therefore has the advantage of reducing the specific pressure with which the ball bears against its seating during writing. The considerable solidity of the substance prevents the same from running out of the point of the device when the same is not in use.

By "plastically strong solidity" is to be understood a solidity corresponding to a viscosity between 1000 and 3000 poises at 20°C . For such a writing substance having "plastically strong solidity" to become flowable, a force of between 1500 and 3000 dynes/cm.² must be applied to it. A substance having such a plastically strong solidity cannot run out due to gravity.

The substance according to the invention is so composed as to become so liquid by heating during writing—i.e., when the ball moves in its seating—that the quantity required for writing can pass through between the ball and the seating. However, this flowability ceases immediately writing ceases, the substance then returning to its original solidity.

To prepare such a substance there can be used as start-

2

ing material a conventional ball point pen ink intended for tropical temperatures—i.e., thickly liquid inks of high viscosity. Substances which are insoluble in the ink and which are preferably not colouring agents are added to these thickly liquid inks. However, the added substances must be finely divided. Such substances are, for instance, particles of silica gel thoroughly mixed with wax. These ink-insoluble substances combine with the ink to form an emulsion which has a plastically strong solidity.

Writing substances of plastically strong solidity for ball point pens are, for instance, the following mixtures, the parts of which are by weight:

(I)

- 100 parts of conventional ball point pen ink for tropical climates
- 10 parts of silica gel, very finely divided
- 20 parts of polyethylene-glycol (wax)

The conventional ball point pen ink consists of the following substances in the quantities indicated:

	Grams
Synthetic resin.....	400
Benzyl alcohol.....	320
Victoria blue.....	200
Oleic acid.....	5
Luviskol K90.....	0.5

(II)

- 25 parts of colophony
- 20 parts of ricinoleates
- 15 parts of oil-soluble colouring agents
- 6 parts of silica gel, very finely divided
- 12 parts of carnauba wax

Preferably, the silica gel used is formed from a powder having a particle size of less than 0.02μ .

Insoluble substances other than silica gel can be used for the purpose of the invention.

Since the silica gel does not colour inks, it may be required to use, for instance, in association with silica gel, a substance which is ink-soluble but which provides colouring.

Of course, the quantities mentioned in the examples can be adapted to requirements—i.e., they can be varied. Similarly, the composition must be adapted to the various applications, depending upon whether the device is to be used as a lipstick or as an applicator of mascara or other cosmetic substances.

I claim:

- 1. A thixotropic writing substance for ball point pens consisting essentially of 100 parts by weight of a conventional ball point pen ink, 10 parts by weight of silica gel particles of less than 0.02μ , 20 parts by weight of a wax selected from the group consisting of carnauba wax and polyethylene glycol wax, said silica gel and wax being intimately mixed in a proportion whereby the writing substance has a viscosity of between 1000–3000 poises at 68°F .

- 2. The writing substance of claim 1 wherein the wax is carnauba wax.

- 3. The writing substance of claim 1 wherein the wax is polyethylene glycol wax.

- 4. A thixotropic writing substance for ball point pens consisting essentially of 25 parts by weight colophony, 20 parts by weight of ricinoleates, 15 parts by weight of a dye, 6 parts by weight of silica gel particles of less than 0.02μ , and 12 parts by weight of carnauba wax,

said silica gel and wax being intimately mixed in a proportion whereby the writing substance has a viscosity of between 1000-3000 poises at 68° F.

References Cited in the file of this patent

UNITED STATES PATENTS

2,222,969 Kistler et al. ----- Nov. 26, 1940

2,622,987

2,623,827

2,715,388

2,790,776

5 2,838,413

2,876,119

2,892,730

Ratcliffe ----- Dec. 23, 1952

Moos ----- Dec. 30, 1952

Cofield et al. ----- Aug. 16, 1955

Savage et al. ----- Apr. 30, 1957

Young ----- June 10, 1958

Dithmar ----- Mar. 3, 1959

Kloepfer et al. ----- June 30, 1959