May 5, 1964 E. S. WIESZECK 3,131,675

WRITING INSTRUMENT

Filed March 12, 1962

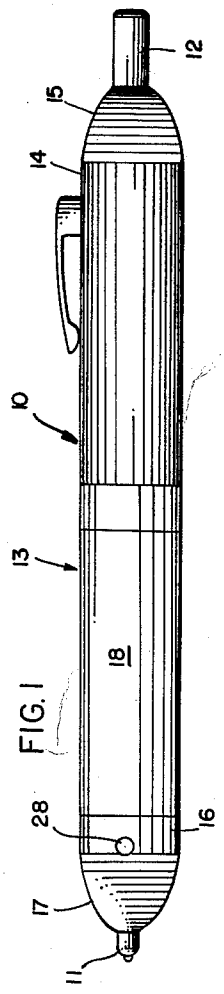


FIG. 1

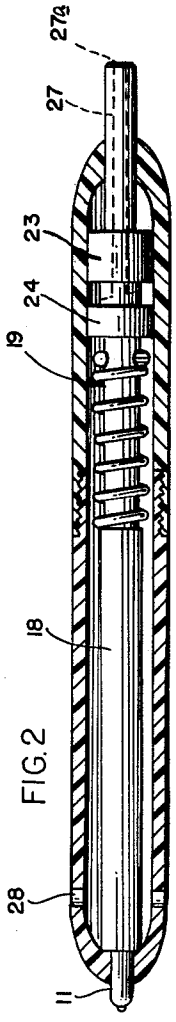


FIG. 2

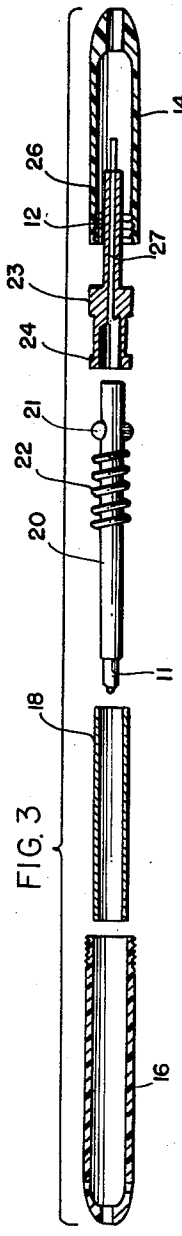


FIG. 3

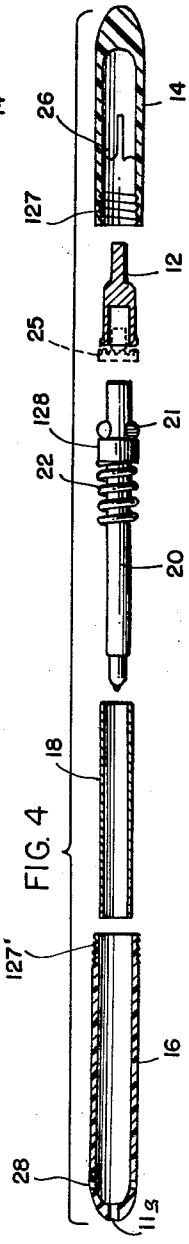


FIG. 4

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WRITING INSTRUMENT

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8 Claims. (Cl. 120—1)

This invention relates to a writing instrument, and, more particularly, to a writing instrument of the extensible point type equipped with means for signalling weather change.

Although devices have been available previously utilizing impregnated fibers, and the like, which are sensitive to humidity changes for the purpose of forecasting weather, these devices have suffered from a number of drawbacks. These devices have not achieved requisite sensitivity in combination with a satisfactory operational life. The instant invention overcomes these drawbacks and in a manner uniquely utilizing the basic construction of a retractable point writing instrument. The provision of such a device, therefore, constitutes an important object of this invention.

Another object of this invention is to provide a writing instrument equipped with a humidity sensitive portion which is automatically flushed or bathed with air upon operation of the instrument.

Other objects and advantages of this invention may be seen in the details of construction and operation set down in this specification.

The invention will be described in conjunction with the accompanying drawing, in which:

FIG. 1 is an elevational view of a writing instrument embodying teachings of this invention;

FIG. 2 is a view similar to FIG. 1 but partially broken away to illustrate the internal mechanism of the FIG. 1 device;

FIG. 3 is an exploded elevational view, partially in section, of the internal parts of the device of FIGS. 1 and 2; and

FIG. 4 is a view similar to FIG. 3 but showing a modified form of the invention.

In the illustration given and with particular reference to FIG. 1, the numeral 10 designates generally a writing instrument which is pictured here to be a ball point pen having a retractable point as at 11 operated by depressing and releasing the usual plunger 12. The pen 10 is seen to include a casing generally designated 13, made up of an upper tubular portion 14 conventionally rounded off as at 15, and a lower barrel portion 16, which also is rounded off as at 17. The portion 16 is transparent, and reveals as at 18 a sheet or layer of fibrous material suitably impregnated to react to changes in humidity. One such impregnant is cobalt chloride, which has a blue color at low humidity and turns progressively red when absorbing more moisture, indicative of increase in the humidity surrounding the instrument. It will be appreciated that the higher the humidity the greater the chance of a storm or rain in general.

The plunger 12 is provided as part of a retracting and extending mechanism generally designated 19, which is shown in exploded form in FIG. 3. In FIG. 3, it will be seen that the point 11 is provided as part of the usual reservoir tube 20. The tube 20 conventionally is equipped with an annular flange or wing as at 21 to confine a coiled spring 22. The spring 22 abuts at its lower end against the fibrous sleeve 18 previously referred to.

The plunger 12, at its inner end, is seen to be equipped with an enlarged portion as at 23 which conventionally is equipped with gear teeth as at 24. These teeth 24 may mate with a second gear tooth piece designated 25 and seen only in FIG. 4 to position the same relative to

guides 26 provided on the interior cylindrical wall of the upper barrel 14.

It is believed that the operation of a retractable pen or pencil of the type described is well known, so that only a brief summary of the structure and operation is necessary. Subsequent depressions of the plunger 12 extend or retract the point 11 by positioning the gear members at 25 in different positions relative to the guides 26.

In the instant invention, I provide means for flushing or bathing the element 18 with air from the outside of the instrument 10. Advantageously, this is achieved by providing the plunger 12 with a longitudinal bore as at 27 and further equipping the lower barrel 16 with one or more openings adjacent the rounded portion 17 as at 28. Thus, when the plunger 12 is depressed as by the thumb of the user, the upper end of the bore 27 as at 27*a* is closed and the movement of the mechanism 19 forces air from the upper barrel 14 into the lower barrel 16 so as to change the air around the element 18. Upon removal of the writer's thumb from the upper end of the plunger 12, the bore 27 is again opened to the atmosphere to permit new air to enter the upper portion 14 of the casing 13. It will be appreciated that subsequent retractions and extensions of the mechanism 19 by virtue of operating the plunger 12 causes the atmosphere within the lower barrel 16 to closely approximate that of the air surrounding the instrument 10. Thus, I have utilized the retraction and extension mechanism to perform an entirely new and useful function to increase the sensitivity of a weather forecasting element 18. Additionally, the movement of air permits the use of a significantly thicker element 18, since the entire atmosphere within the barrel 16 approximates that external thereto, there being no need to resort only to very thin layers of paper, or the like, because of the lack of throughflow of air. At the same time, the flow of air can upset any dust or dirt particles which may become deposited in the element 18 and thus tend to obscure its coloration. By employing a thicker tube of sensitive material at 18, it is capable of providing the lower abutment for the coil spring 22.

An alternative form of the invention is seen in FIG. 4, where again the lower barrel is designated by the numeral 16 and is equipped with a flow port as at 28. In this embodiment, instead of aperturing or boring the plunger 12, I provide a transverse bore as at 127 in the side wall of the upper barrel 14. The plunger 12 is seen to have a solid outer or upper end. The reciprocation of air between the ports 127 and 28 is achieved through the interposition of a piston-like ring 128 on the reservoir 20, and intermediate the spring 22 and the abutment wings 21. The piston 128 rides against the interior of the casing 13 in a slide fit, and thus serves to pump air through the element 18 when it passes the opening 127.

In the illustration given, I position the opening 127 in the threaded portion of the upper barrel 14, and provide a mating opening 127′ in the threaded portion of the lower barrel 16. Thus, in this illustration, air is pumped from the aligned openings 127 and 127′ around the sleeve element 18 and out of the hole 28, bathing the absorbent material 18 with ambient air from about the instrument 10.

The invention may be advantageously practiced by constructing the upper barrel 14 of resilient plastic material, at least in the portion thereof adjoining the lower barrel 16. By closing either the bore 27 or the opening 127, as by the manipulator's finger, and squeezing the flexible portion of the upper barrel, air can first be forced out of the instrument either through the opening 28 or the opening 11*a*, in the event the writing point is retracted. Subsequent release of the resilient portion of the

upper barrel **14** draws air in over the fibrous tube **18** to bathe the same in air from around the instrument **10.**

While, in the foregoing specification, I have described the invention in considerable detail for the purpose of explaining the same to those skilled in the art, many variations in the details herein given may be made by skilled artworkers without departing from the spirit and scope of the invention.

I claim:

1. In a writing instrument,

(A) a generally tubular body having

(1) a retractable writing point at one end and

(2) having a transparent wall portion intermediate the ends thereof,

(B) means in said body including a plunger piece protectable from the other body end for extending and retracting said point,

(C) fibrous means in said body visible through said transparent wall portion, said fibrous means being sensitive to humidity changes in the air surrounding said body,

(D) an opening in said body adjacent one end of said fibrous means, and

(E) means associated with said plunger piece for flowing air past said fibrous means toward said opening.

2. The structure of claim 1 in which said associated means includes a bore in said plunger piece coverable by the finger of a writer in depressing said plunger piece.

3. The structure of claim 1 in which said associated means includes a piston mounted on said extending and retracting means, a second opening in said body positioned for closure by said piston during reciprocation of said extending and retracting means.

4. In a writing instrument,

an elongated body equipped with a reciprocatory mechanism for extension of a writing point at one end thereof and also equipped with a transparent wall portion,

means in said body aligned with said transparent wall portion sensitive to change in humidity in the air surrounding the instrument to change the appearance of said means and thereby give a signal visible through said transparent wall portion, and

means associated with the reciprocatory mechanism for flowing a portion of the surrounding air past said humidity-sensitive means upon actuation of said mechanism.

5. In a writing instrument,

an elongated body equipped with a reciprocatory mechanism for extension of a writing point at one end thereof and also equipped with a transparent wall portion,

means in said body aligned with said transparent wall portion sensitive to change in humidity in the air surrounding the instrument, and

means associated with the reciprocatory mechanism for flowing a portion of the surrounding air past said humidity-sensitive means upon actuation of said mechanism, said associated means including openings in said body spaced longitudinally of said body with said humidity-sensitive means being positioned between said openings.

6. In a writing instrument,

an elongated body equipped with a transparent wall portion and with a reciprocatory mechanism for extension of a writing point at one end thereof, said mechanism having a finger manipulatable portion projectionable longitudinally beyond said body at the other end of said body,

means in said body aligned with said transparent wall portion sensitive to change in humidity in the air surrounding said instrument to change the appearance of said means and thereby give a signal visible through said transparent wall portion, and

means associated with the reciprocatory mechanism for flowing a portion of the surrounding air past said humidity-sensitive means upon actuation of said mechanism, said means including openings in said body spaced longitudinally of said body, with said humidity-sensitive means being positioned between said openings, said finger manipulatable portion forcing air to flow between said openings upon movement of said finger manipulatable portion.

7. The structure of claim 6 in which said mechanism includes a piston.

8. The structure of claim 6 in which said finger manipulatable portion is equipped with a longitudinal bore extending therethrough.

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