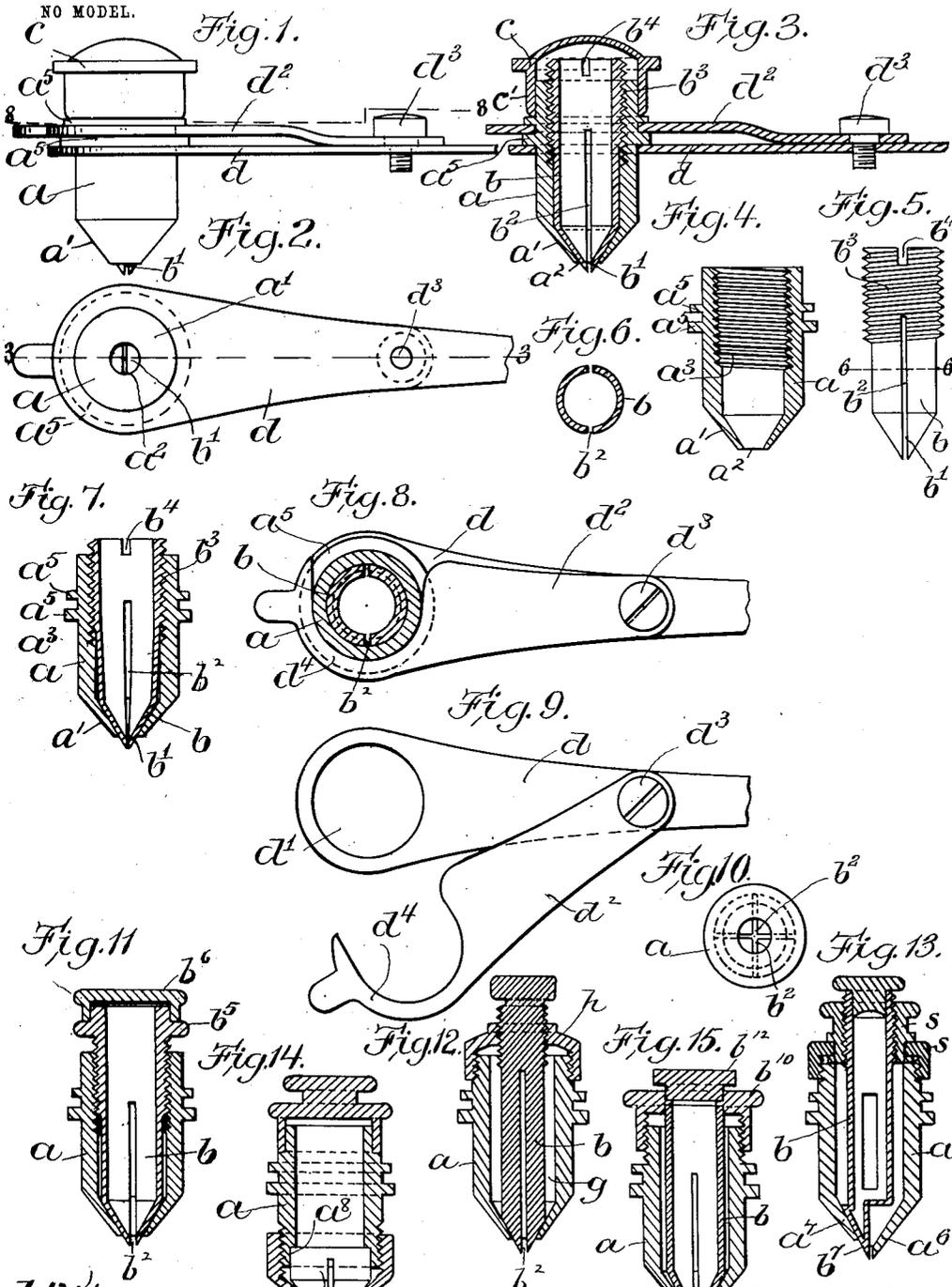


C. J. MANNING.
RECORDING PEN.

APPLICATION FILED FEB. 1, 1904.



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RECORDING-PEN.

SPECIFICATION forming part of Letters Patent No. 768,473, dated August 23, 1904.

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To all whom it may concern:

Be it known that I, COLEMAN J. MANNING, of Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Recording-Pens, of which the following is a specification.

This invention relates to recording-pens such as are used in connection with pressure-gages, recording-thermometers, &c.

The invention has for its object to provide an efficient recording-pen adapted to make a neat and uniform mark without permitting the application of an excessive or irregular amount of ink to the recording-surface and without involving objectionable complication or delicacy of construction.

The invention also has for its object to enable the pen to be adjusted to any degree desired to regulate the flow of ink from it.

The invention also has for its object to enable the pen to be adjusted so that it will entirely prevent the flow of ink when the pen is not in use.

To these ends the invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a recording-pen embodying my invention, the pen being shown engaged with a holder. Fig. 2 represents an end view of the pen looking toward its ink-delivering end. Fig. 3 represents a section on line 3 3 of Fig. 2. Fig. 4 represents a sectional view of the casing or outer member of the pen shown in Fig. 3. Fig. 5 represents a side elevation of the inner member shown in Fig. 3. Fig. 6 represents a section on line 6 6 of Fig. 5. Fig. 7 represents a view similar to Fig. 3, showing a different adjustment of the inner member. Fig. 8 represents a section on line 8 8 of Fig. 1 looking downwardly. Fig. 9 represents a plan view of the pen holder or carrier detached from the pen. Fig. 10 represents a view similar to Fig. 2, showing a modification. Figs. 11 to 15, inclusive, rep-

resent sectional views showing other modifications.

The same reference characters indicate the same parts in all the figures.

Referring first to the preferred embodiment of my invention shown in Figs. 1 to 8, inclusive, *a* and *b* represent the members of my improved pen. The outer member *a*, which incloses the inner member *b*, is tubular and is provided with a contracted or frusto-conical lower portion *a'*, in the center of which is a circular opening *a''*. The inner member *b* is provided with a substantially conical marking-tip *b'*, which projects partially through the opening *a''*. The inner member *b* is also provided with a longitudinal slot *b''*, which intersects the apex of the tip *b'* and is of sufficient length to enable the parts of the member *b* separated by the slot to be moved toward each other, and thus vary the width of the slot, the resilience of the said parts causing them to normally stand with the slot open or at its maximum width. Means are provided for causing a longitudinal movement of one of the members relatively to the other to vary the extent of projection of the marking-tip *b'* through the opening *a''*, said means in this embodiment of my invention being an external screw-thread *b'''*, formed on the inner member *b*, and an internal screw-thread *a'''*, formed in the outer member *a* and engaging the thread *b'''*. The upper end of the member *b* may be slotted at *b⁴* to engage a screw-driver. It will be seen that when the member *b* is rotated it will be given a longitudinal movement in the member *a* and that when this movement is such as to increase the projection of the tip *b'* through the opening *a''* the parts of the tip will be forced inwardly by the contracted portion *a'* of the outer member, thus decreasing the width of the slot, as indicated in Fig. 7, and correspondingly decreasing the flow of ink through said slot, the slot communicating, as hereinafter described, with an ink-reservoir. I have found that the substantially conical tip *b'*, having a slot intersecting the apex of the tip and communicating with an ink-reservoir, constitutes a

very desirable and effective marking device adapted to move smoothly in any direction over a recording-sheet without scratching or tearing the latter and without leaving a mark of varying or irregular width. I have also found that the provision of means for varying the width of the slot enables the width of the recording mark or line to be varied, as may be found desirable. The said provision for adjustment also permits compensation for variations in the fluidity of the ink or marking agent employed. The compression of the marking-tip to decrease the width of the slot may be carried to such an extent as to close the slot and prevent the passage of ink there-through when the pen is not in use. It will be seen that the construction of the member *b* is in some respects like that of a draftsman's ruling-pen. It differs, however, from the ordinary ruling-pen in that the marking-tip is substantially conical and can be moved in any direction without affecting the result or the character of the line—that is to say, the movement of the pen may be in a direction at right angles to the plane of the slot *a*² or it may be parallel with said plane. In this embodiment of my invention the inner member *b* is tubular, its internal cavity *b*¹ constituting an ink-chamber. The outer member *a* covers the slot *b*² and prevents the escape of ink therethrough excepting at the part of the tip which projects below the opening *a*². *c* represents a cap or cover which is applied to the upper end of the outer member *a* and prevents the evaporation of ink. The said cover has a flange *c*¹, which may have a frictional or a screw-thread engagement with the member *a*.

d represents a holder for the above-described pen, the said holder being an arm adapted for connection at one end with a suitable support and having at its opposite end a circular orifice *d*¹, adapted to receive the outer member *a*. Said member is provided with peripheral flanges *a*⁵ *a*⁶, the lower one of which is seated on the portion of the arm *d* surrounding the orifice *d*¹.

*d*² represents a hook-shaped arm pivoted at *d*³ to the arm *d* and having a hook *d*⁴ adapted to enter the groove between the flanges *a*⁵, and thus hold the pen in engagement with the arm *d*.

In Figs. 10 to 15, inclusive, I show various modifications, all embodying the essential features of my invention. These modifications will be next described. Fig. 10 shows the inner member *b* provided with two slots *b*², each intersecting the apex of the marking-tip *b*¹, so that the said tip is subdivided into four sections or nibs instead of two, as in the construction shown in the figures previously referred to. In Fig. 11 I show the upper end portion of the member *b* extended and provided with a flange *b*⁵ and with a cap *b*⁶. In

Fig. 12 I show the inner member *b* made without an ink-chamber, the diameter of said member being reduced, so that an angular ink-chamber *g* is formed between it and the member *a*. In this case the internal thread engaging the external thread on the member *b* is formed in a cap *h*, detachably engaged with the member *a*. In Fig. 13 the inner member instead of having a plurality of nibs separated by a slot has a single nib *b*⁷, which constitutes practically half of the cone-shaped tip shown in the preceding figures. The contracted lower end of the outer member *a* is in this case extended downwardly at one side of said member to form a complementary nib *a*⁶, which cooperates with the nib *b*⁷. At the other side of the nib *b*⁷ from the tapering portion *a*⁶ is a shorter tapering portion *a*⁷, which bears on the outer surface of the nib *b*⁷ and causes it to move toward the fixed nib *a*⁶ when the member *b* is moved downward. In this case one side of the ink-delivering slot is formed by a portion of the outer member and the other side by a portion of the inner member. The member *b* is adjusted in this case by an adjusting-sleeve *s*, which is internally screw-threaded to engage an external thread on the member *b* and is rotatively engaged with a flanged nut *s*¹, engaged with the outer member *a*. The rotation of the sleeve *s* causes the member *b* to move endwise without rotating. In Fig. 14 I show an inner member *b*⁸, which is considerably shorter than the inner member shown in the preceding figures, its inner end being seated on a shoulder *a*⁸, formed on the interior of the outer member *a*. In this case the outer member *a* has a contracted lower end portion *a*⁹, which is made in a separate piece adjustably connected with the lower end of the body portion of the member *a* by screw-threads. In this case the variation of the width of the slot *b*² is effected by adjusting the contracted portion *a*⁹. In Fig. 15 the inner member *b* is engaged with a cap *b*¹⁰, which is engaged with the body *a* and has an orifice closed by a plug *b*¹².

I claim—

1. A recording-pen having a substantially conical marking-tip, an ink-delivering slot intersecting the apex of the tip, and means for varying the width of said slot.

2. A recording-pen having a substantially conical marking-tip, a normally open ink-delivering slot intersecting the apex of the tip, and means for compressing the tip to decrease the width of the slot.

3. A recording-pen having a substantially conical marking-tip, an ink-delivering slot intersecting the apex of the tip, means for varying the width of the slot, and an ink-chamber communicating with the slot.

4. A recording-pen having a substantially conical marking-tip, an ink-delivering slot in

intersecting the apex of the tip, an ink-chamber communicating with the slot, and means for closing the slot to prevent the flow of ink therethrough.

5 5. A recording-pen comprising a tubular outer member having a contracted lower portion provided with an opening, an inner member having a substantially conical marking-tip projecting through said opening, and a normally open slot intersecting the apex of said tip, said inner member being longitudinally movable in the outer member, and means for adjusting said inner member to vary the width of the slot.

15 6. A recording-pen comprising, first, a tubular outer member having an internal screw-thread and a contracted lower portion provided with an opening; and secondly an inner member having a substantially conical marking-tip projecting through said opening, a normally open slot intersecting the apex of said tip, and an external screw-thread engaging the internal thread of the outer member, the said inner member being rotatable to give it a longitudinal adjustment.

25 7. A recording-pen comprising, first, a tubular outer member having a contracted lower portion provided with an opening, an inner member having a substantially conical marking-tip projecting through said opening, a normally open slot intersecting the apex of the tip, and an ink-chamber communicating

with said slot, and means for longitudinally adjusting said inner member.

8. A recording-pen comprising, first, an inner member having a substantially conical marking-tip and a slot intersecting the apex of the tip; and secondly, an outer member having a contracted end through which said tip projects, the said outer member covering the slot above the apex of the tip.

9. A recording-pen comprising, first, an inner member having a substantially conical marking-tip and a normally open slot intersecting the apex of the tip; and secondly, an outer member having a contracted end through which the tip projects, the said pen having means for effecting a relative adjustment of the said contracted end and marking-tip to vary the width of said slot.

10. A recording-pen having a cylindrical body provided with marking means and with peripheral flanges, combined with a supporting-arm having an orifice surrounded by a seat for one of said flanges, and a hook-shaped pivoted arm formed to enter the groove between said flanges.

In testimony whereof I have affixed my signature in presence of two witnesses.

COLEMAN J. MANNING.

Witnesses:

P. W. PEZZETTI,
E. BATCHELDER.