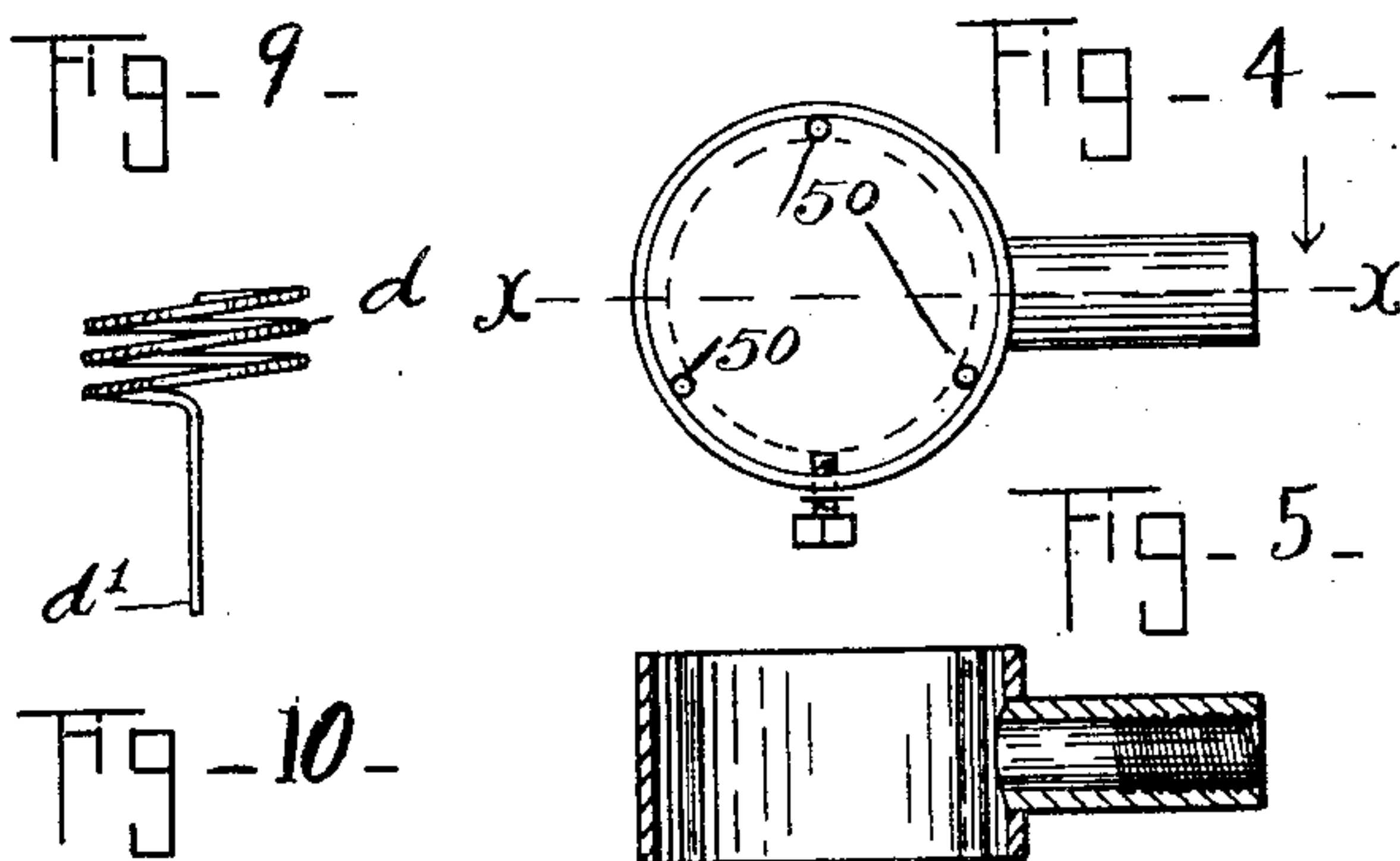
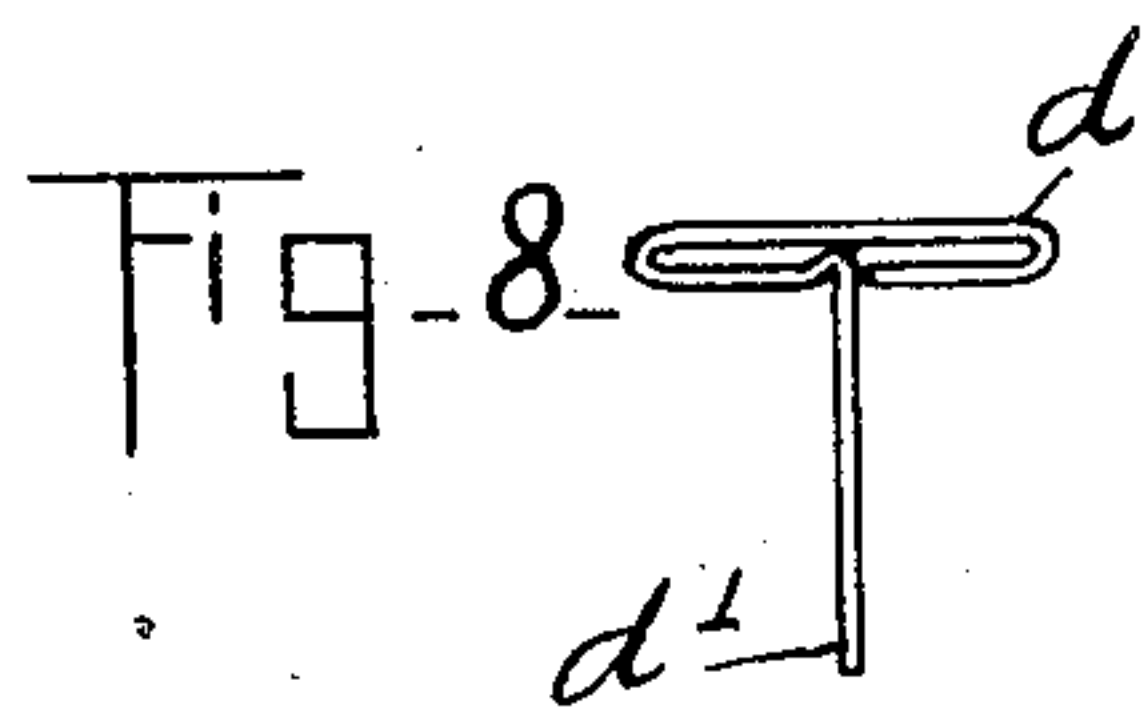
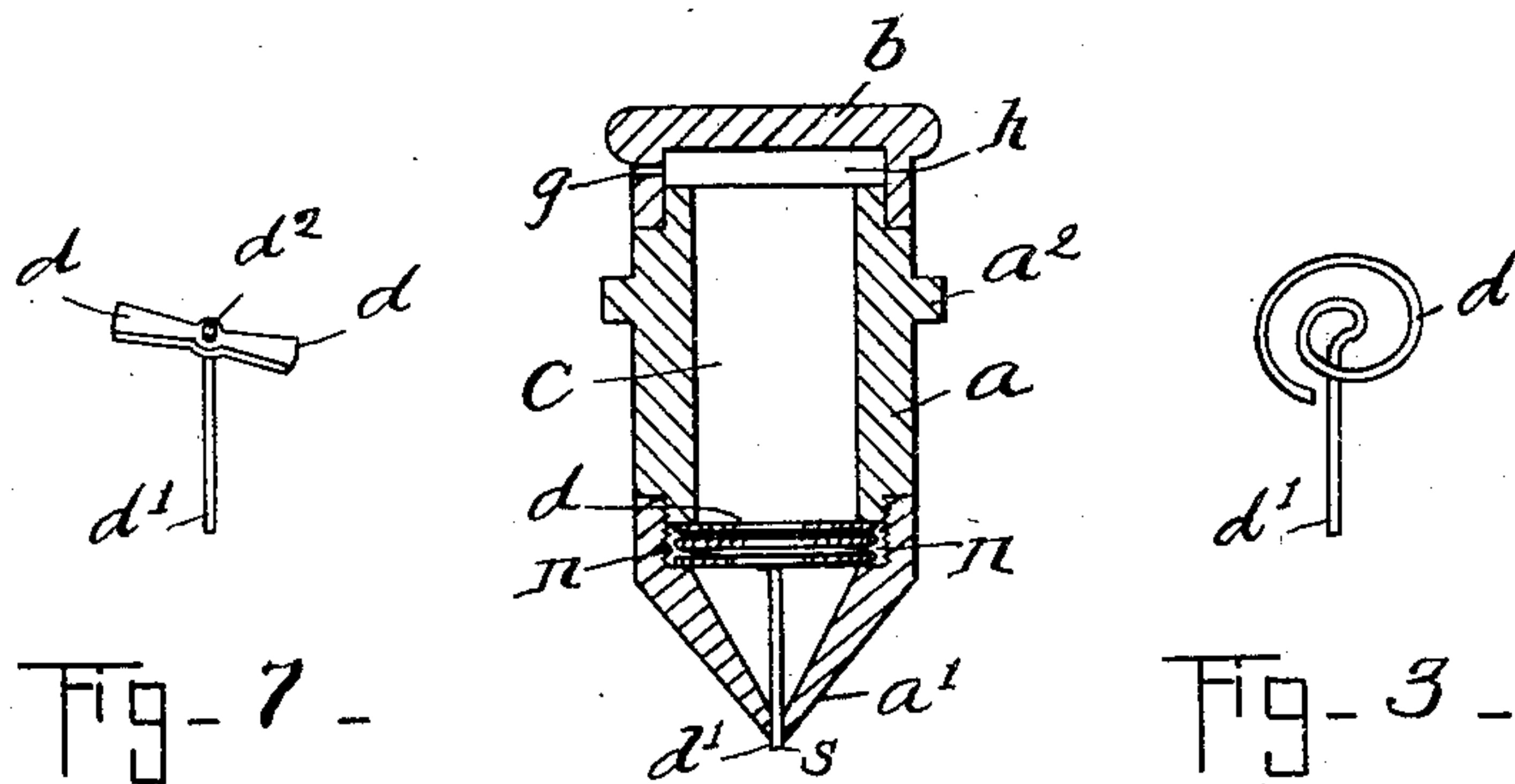
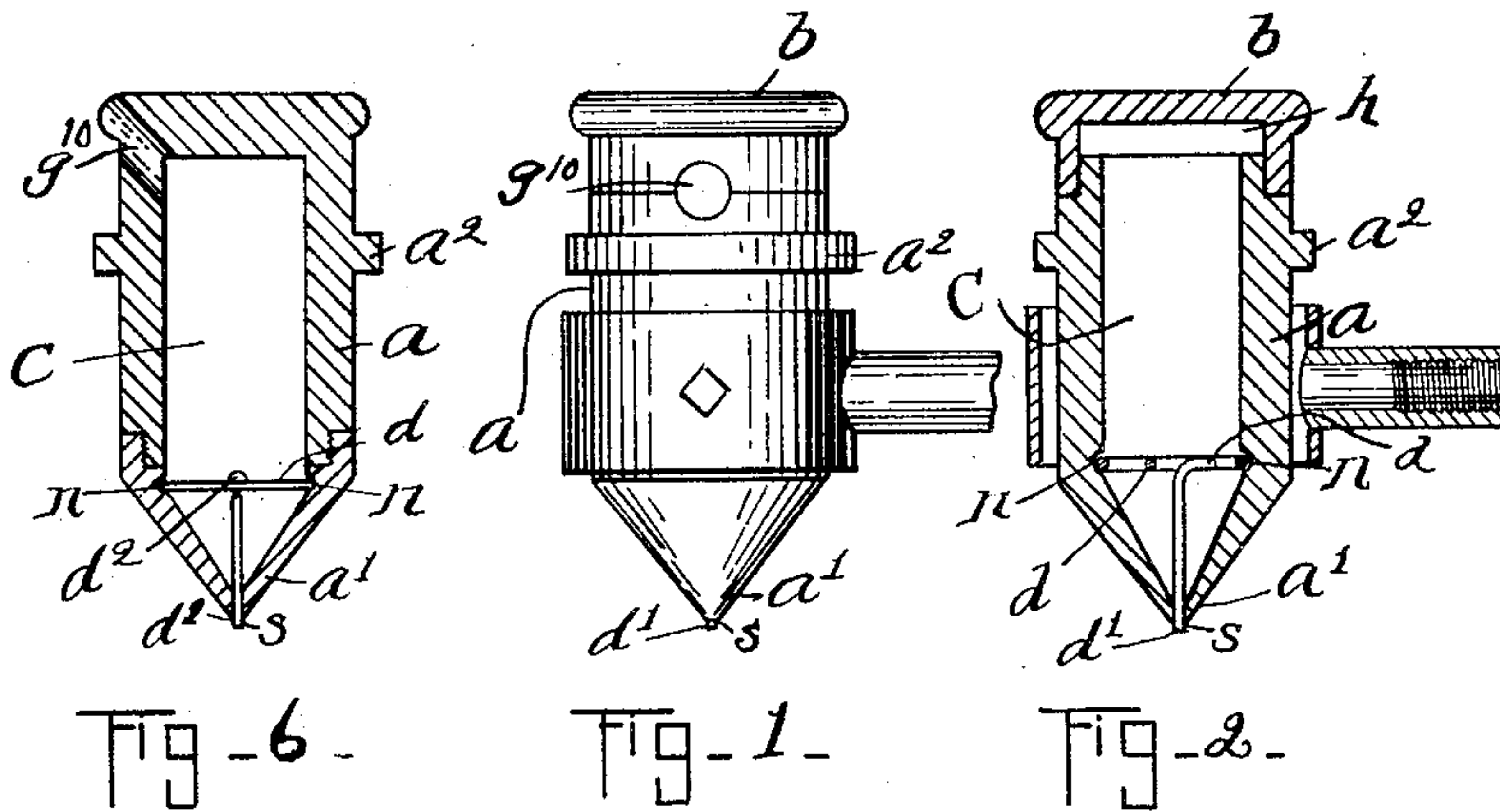


F. A. JONES.
RECORDING PEN.

APPLICATION FILED AUG. 27, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
H. B. Davis.
Mand M. Piper

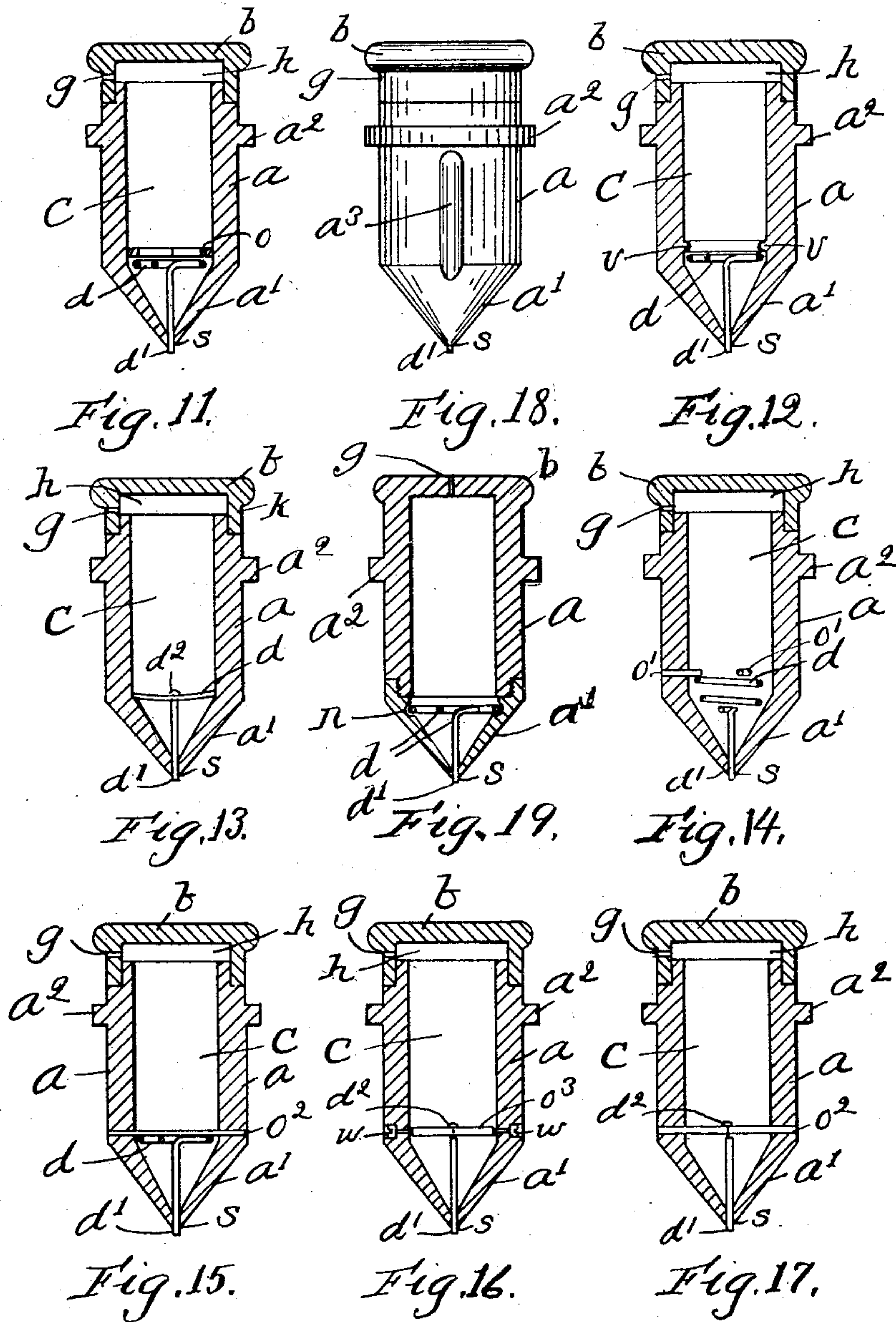
Inventor:
Florentine A Jones.
By Noyes & Harriman
Atty.

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UNITED STATES PATENT OFFICE.

FLORENTINE A. JONES, OF BOSTON, MASSACHUSETTS.

RECORDING-PEN.

SPECIFICATION forming part of Letters Patent No. 743,725, dated November 10, 1903.

Application filed August 27, 1903. Serial No. 170,929. (No model.)

To all whom it may concern:

Be it known that I, FLORENTINE A. JONES, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Recording-Pens, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to that class of pens or marking devices that are employed in connection with gages, thermometers, or other instruments for recording pressures, temperatures, and their variations. Pens of this class are of necessity very small, and it is exceedingly difficult to conduct the ink from the interior of the pen to the chart or recording-dial in a regular and even manner, so as to produce a clear line of a uniform width on the chart or dial, owing to the very small quantity of ink required. Under these conditions it will be readily understood that the ink recording wire or stylus should be protected as far as possible from all danger of derangement when in the hands of unskilled or careless persons.

The object of my invention is to produce means for holding the stylus in the fixed position properly adjusted to its work, said means being not only independent of the cap which is used to close the reservoir, but is concealed within the reservoir and therefore sufficiently inaccessible to be out of easy reach, so that the stylus cannot be readily deranged, and thereby prevented from working, and, furthermore, cannot be lost through carelessness or negligence. The stylus held in place by the means embodying this invention enables the reservoir of the pen to be filled with ink without removing the stylus and prevents its derangement or loss out of the pen.

Figure 1 shows in side elevation a reservoir-pen embodying this invention. Fig. 2 is a vertical section of the pen and its holder shown in Fig. 1. Fig. 3 is a detail of the stylus employed in the pen, shown in Fig. 2. Fig. 4 is a plan view of the holder of the pen. Fig. 5 is a vertical sectional detail of the holder of the pen. Fig. 6 is a vertical section of the pen having a modified form of stylus. Fig. 7 is a detail of the stylus shown

in Fig. 6. Fig. 8 is a detail of another modified form of stylus. Fig. 9 is a vertical section of the pen having another modified form of stylus. Fig. 10 is a detail of the stylus shown in Fig. 9. Fig. 11 is a vertical section of the pen, showing modified means for holding the stylus shown in Fig. 3. Fig. 12 is a vertical section of the pen, showing another modified means for holding the stylus shown in Fig. 3. Fig. 13 is a vertical section of the pen, showing another modified form of stylus. Fig. 14 is a vertical section of the pen, showing modified means for holding the stylus shown in Fig. 10. Fig. 15 is a vertical section of the pen, showing modified means for holding the stylus shown in Fig. 3. Fig. 16 is a vertical section of the pen, showing another modified form of stylus and means for holding it. Fig. 17 is a vertical section of a pen, showing modified means for holding the stylus shown in Fig. 16. Fig. 18 is a side elevation of a pen shown in Fig. 1 removed from its holder. Fig. 19 is a vertical section of the pen to be referred to.

a represents the pen-body, which is made cylindrical in shape and has a conical or pointed lower end a' , a flange a^2 , and a vertical groove a^3 . The interior of the body is made hollow and serves as a reservoir c for the ink.

The upper end of the pen is reduced to form a shoulder, and a cap b is adapted to be placed upon said reduced end, which abuts against the shoulder and thereby effectually closes the inside reservoir. The ink-orifice s is made as a small hole at the extremity of the pointed end a' of the body.

The stylus or ink-regulating wire d' is contained in the reservoir and projects from said ink-orifice s , and said stylus is herein shown as having a head d , which latter engages suitable means provided within the reservoir and independent of the closing-cap b for holding the stylus in fixed position. A vent g is provided in the closing-cap b , which insures a proper flow of the ink through the orifice s .

The closing-cap b is chambered, as at h , and a vent g leads from said chamber.

In Figs. 2 and 3 the head d of the stylus is made as a flat coil of wire, which is more or less spring-acting so as to be expansible, and

within the reservoir the body is formed or provided with an annular groove *n*, which receives said spring-acting head, said groove serving as the means for holding the stylus in fixed relative position with the extremity of the wire *d'* projecting slightly through the ink-orifice, as the upper part of the groove forms a shoulder against which the head of the stylus abuts, to thereby hold said stylus unrecedingly fixed.

Referring to Figs. 6 and 7, the head of the stylus is made as a flat plate, which extends diametrically across the reservoir, the opposite ends of said plate entering the groove and therefore abutting against the shoulder which is provided within the reservoir.

In Fig. 8 the head of the stylus is made similar to the head shown in Fig. 7, except it is composed of wire which is bent into the proper form to serve as a plate, and therefore comprises a head. As in Fig. 6, the cylindrical body of the pen is made independent of the conical or pointed end, and the latter is screwed onto the lower end of said cylindrical body; but so far as my invention is concerned it is immaterial whether the pen-body is made in one piece or composed of many pieces.

Referring to Figs. 9 and 10, the head *d* of the stylus is composed of wire bent circularly and having a plurality of turns, and said head is placed in an annular groove *n*, which is formed or provided within the reservoir, abutting against the shoulder, which in this particular instance is formed by the lower end of the cylindrical body.

Referring to Fig. 11, the means for holding the stylus in fixed position consists of a shoulder formed as a split ring *o*, which is secured in position within the reservoir, the stylus in this instance being the same as the stylus shown in Fig. 3.

Referring to Fig. 12, a rib *v* is formed within the reservoir, and the stylus is formed like that shown in Fig. 3. The head of the stylus bears against the rib and is thereby held unrecedingly fixed.

Referring to Fig. 13, the stylus is made as the wire pin *d'*, attached to the middle of a spring-acting plate *d*, which by its spring action impinges the wall of the reservoir.

Referring to Fig. 14, a plurality of short pins *o'* project into the reservoir, passing through the wall, and the head of the stylus bears against said pins. The stylus in this instance is made like that shown in Fig. 10.

Referring to Fig. 15, a cross-bar *o*² extends diametrically across the reservoir, and the head of the stylus bears against this cross-bar.

Referring to Fig. 16, the cross-bar *o*³ extends diametrically across the reservoir, which is held in place by set-screws *w*, and the stylus consists of a wire, which is attached to this cross-bar.

Referring to Fig. 17, the stylus consists of a wire attached to the cross-bar *o*², which latter extends diametrically across the reservoir.

Referring to Fig. 19, the cap *b* is formed

integral with the body, and the head of the stylus sprung into an annular groove in the removable end portion, which serves as the cap.

It is evident that the stylus may be constructed in a variety of ways and in different forms, but I have shown a sufficient variety of forms to illustrate, broadly, the stylus, which consists of a wire adapted to project through the ink-orifice and a head which is disposed within the reservoir and which engages and is held unrecedingly fixed by means provided within the reservoir of the pen, said means being independent of the closing-cap. Furthermore, it is evident that the means for holding the stylus unrecedingly fixed in position may be constructed in a variety of ways and in different forms, but I have shown a sufficient variety of forms to illustrate, broadly, the principal of the means which is independent of the closing-cap, and which is located more or less remote from said cap, and which holds the stylus properly regulated to its work.

It will be understood that when the pen is constructed as shown in Figs. 2 and 3 the coiled wire head of the stylus will readily spring into the annular groove which is provided for receiving it and thereby hold said stylus in place, and there is no danger whatsoever of the stylus being lost out of the pen, as is often the case where the stylus is not fixed.

When filling the reservoir with ink, it frequently happens that the ink is spilled over the top of the reservoir and running down the sides of the pen gradually seals the pen to its holder, which latter is attached to or formed as a part of the recording-arm of the instrument, and to obviate this difficulty the holder is made as a ring, (see Figs. 2, 4, and 5,) much larger in diameter than the cylindrical body and within said ring a plurality of bearing points or wires or pins are placed, which engage the cylindrical body of the pen, thereby leaving spaces for the passage of any ink which may be spilled. The pen is placed within said ring-like holder and is secured in position by means of a set-screw, which passes through the ring and impinges firmly against the body of the pen.

In case it is desired to fill the reservoir with ink without removing the pen from the holder and without removing the cap (providing the pen is made with a removable cap) a filling-hole *g*¹⁰ is provided, which is located above the stylus, as represented in Figs. 1 and 6.

Having thus explained the differences of my invention and described the way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I claim—

1. A pen having a reservoir closed by a cap and provided with an ink-orifice, a stylus contained in said reservoir, consisting of a wire which projects through the ink-orifice having

at its inner end a head, said reservoir being provided with means independent of the cap for engaging said head, and thereby holding the stylus in fixed position, substantially as described.

2. A pen having a reservoir closed by a cap and provided with an ink-orifice, a stylus contained in said reservoir comprising a wire which projects through the ink-orifice, and means for engaging the wall of the reservoir to hold the stylus unrecedingly fixed, substantially as described.

3. A pen having a reservoir closed by a cap and provided with an ink-orifice, a stylus contained in said reservoir consisting of a wire which projects through the ink-orifice having at its inner end a head, and a shoulder within said reservoir against which said head abuts, substantially as described.

4. A pen having a reservoir closed by a cap, and provided with an ink-orifice, a stylus contained in said reservoir consisting of a wire which projects through the ink-orifice having at its inner end a head, said reservoir being provided with an annular groove which receives said head, and holds the stylus in fixed position, substantially as described.

5. A pen having a reservoir closed by a cap and provided with an ink-orifice, a stylus contained in said reservoir consisting of a wire which projects through the ink-orifice having at its inner end a coiled wire head, and an annular groove in said reservoir, which receives said head, and holds the stylus in fixed position, substantially as described.

6. A pen having a reservoir closed by a cap and provided with an ink-orifice, a stylus contained in said reservoir consisting of a wire which projects through the ink-orifice having at its inner end a spring-acting head and means provided on the interior of the reservoir remote from the cap which is engaged by said head, substantially as described.

7. A reservoir-pen, a holder therefor consisting of a ring inclosing the pen provided with a plurality of bearing-points and means for securing said pen to said holder, substantially as described.

8. In a reservoir-pen having a stylus, a reservoir provided with an ink-orifice and having a shoulder within said reservoir against which the head of the stylus abuts, substantially as described.

9. In a reservoir-pen having a stylus, a reservoir provided with an ink-orifice and having an annular groove within said reservoir adapted to receive the head of the stylus, substantially as described.

10. In a reservoir-pen having a stylus, a reservoir provided with an ink-orifice and having means for engaging the head of the stylus and having a filling-hole above the stylus, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FLORENTINE A. JONES.

Witnesses:

B. J. NOYES,

L. H. HARRIMAN.