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(54) DRAWING DEVICE FOR USE WITH A TABLE
 AND ELECTRICAL EVALUATING MEANS

(71) We, ERNST LEITZ WETZLAR GMBH of 6330 Wetzlar, Postfach 2020, Federal Republic of Germany, a limited liability company organised under the laws of the Federal Republic of Germany do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention relates to a drawing device comprising a magnet coil for an optical device with a drawing table and electrical evaluating means.

Known drawing devices provided with a drawing stylus enable the observer to scan structural elements to be examined on a drawing table constructed as a grating plate. Pulses are generated which may be read off or stored in an evaluating device.

For the determination of volume portions or particle numbers, a microscope with a drawing tube is preferably used, which makes it possible for the grating plate to be mirrored into the ray path of the microscope. The observer therefore sees the image of his object with the raster of the grating plate superimposed. Also the drawing stylus, in so far as it is guided over the grating plate, is recognisable.

The accuracy of measurement is substantially dependent upon the exactness, with which the magnet coil, triggering the pulses, of the drawing stylus can be guided over the raster plate. It is necessary to bring the coil as close as possible to the writing point. To accomplish this the magnet coil has been disposed annularly around the writing stylus in immediate proximity of the writing point. This problem, however, does not exist with devices which contain no writing means as such, but only a scanning element. In this case, the magnetic field or force can be transmitted by a metallic stylus.

Drawing devices with a magnet coil annu-

larly arranged around the stylus have, however, the disadvantage that they are only of practical use when perpendicular to the drawing table. Also with known writing devices it cannot be ascertained with certainty whether or not the magnet has switched on, since feelable or visible control means for this are not present. Furthermore, it is regarded as a disadvantage that the stylus (pencil lead) of a writing device of that kind is not very adaptable, owing to the accommodation of the coil.

According to the present invention there is provided a drawing device for use with a drawing table and electrical evaluating means, comprising an elongate body member provided with a drawing stylus, and a magnet coil disposed outside the axis of the stylus and having an axis which is inclined to the axis of the body member.

The magnet coil preferably has an inclination which is so chosen that the axis of the magnet coil is in use alignable perpendicularly to a support surface of a drawing table in the "normal" writing attitude of the drawing device. Also, the axis preferably intersects the point of the writing stylus. Thereby the scanning location of the coil co-incides as desired exactly with the point of contact of the drawing stylus.

Preferably a light source such as a pilot lamp is associated with the magnet coil in order to improve the visibility of the drawing stylus during a microscopic observation. The pilot lamp preferably consists of a luminescent diode which can be fed by way of an evaluating device. It is, however, also possible to provide a separate source of voltage in the body member itself. The magnet coil and the pilot lamp are preferably accommodated in a tongue-shaped extension piece, projecting towards the point of the drawing stylus. The body member itself comprises for example two inter-connecting parts, e.g. plug in parts, each provided with respective inter-

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connecting, e.g. plug in, elements which together provide an electrical connection, one member of the body member constructed as a receiving member for tuning or
 5 adjusting device such as a potentiometer. This enables corrections possibly necessary for the electrical control parts of the analysing device to be undertaken without having to open this for the purpose of access. The
 10 body member may be constructed in such a manner that commercial felt-tipped pens can be received and exchanged.

An embodiment of the present invention will now be more particularly described by way of example and with reference to the accompanying drawings in which:

Figure 1 shows a drawing device comprising a magnet coil disposed outside the axis of the stylus, and a cable extending from an end
 20 of the device.

Figure 2 shows an enlarged view of the writing point, and

Figure 3 shows an enlarged view of the opposite end region of the device to that shown in Figure 2.

Referring to the drawings, there is shown a felt-tipped pen 1 disposed in a body member 2 comprising parts 2a and 2b and having a bore 3 which is adapted to the width of the
 30 felt-tipped pen 1. The part 2b is a head portion which is detachably plugged onto the part 2a which is a holding member. A connecting cable 4 projects out of the head portion and has a connecting plug 5 for connecting the cable to an evaluating device (not
 35 shown).

As shown in Figure 2, the holding member 2a has a tongue-shaped clip 6, to which an annular magnet coil 7, extending at one side
 40 of the body member, and a pilot lamp 8 are fastened. The axis 7a of the annular magnet coil co-incides with the axis of the pilot lamp and is inclined at an angle of 45° to the axis 1a of the writing point 1b of the pen 1. By
 45 disposing the magnet coil at this inclination, which corresponds to the "normal" writing attitude, the axis 7a is in use perpendicular to a writing support 18 of an evaluating device. The axis 7a intersects the writing point 1b.

The axis 7a intersects the writing point 1b. Electrical connecting conductors 9a and 9b for the magnet coil and pilot lamp are
 50 guided in a narrow space 10 between the felt-tipped pen and the holding member 2a.

From Figure 3 it can be seen that the electrical conductors are connected to a plug connection 11, which enables the holder head 2b to be removed. A connection 12
 55 extends between the plug connection 11 and a potentiometer 13, which is settable by means of the screw 14. Associated with the potentiometer is a micro-switch 15, the contact points 15a of which are operatively connected to the felt-tipped pen 1. On placing
 60 the felt-tipped pen in the support 18, the micro-switch is actuated. Notching-in then

takes place which enables an observer to be sure the device has been switched on.

An advantage of the above described embodiment of the present invention is that the device is more manipulatable than
 70 known devices. Also commercial felt-tipped pens may be used. Furthermore, the stylus can be recognised more clearly than hitherto in the observation of a measuring field and a
 75 grating plate.

WHAT WE CLAIM IS:-

1. A drawing device for use with a drawing table and electrical evaluating means, comprising an elongate body member provided with a drawing stylus, and a magnet
 80 coil disposed outside the axis of the stylus and having an axis which is inclined to the axis of the body member.

2. A device as claimed in claim 1, wherein the magnet coil has an axis which is inclined to the axis of the stylus.

3. A device as claimed in either claim 1 or claim 2, wherein the axis of the magnet coil intersects the axis of the body member at the point of the stylus.

4. A device as claimed in any one of the preceding claims, further comprising a fastening member retaining the magnet coil and a light source to the body member.

5. A device as claimed in claim 4, wherein the fastening member is a tongue extending from the body member towards the tip of the stylus.

6. A device as claimed in either claim 4 or claim 5, wherein the light source and the magnet coil are co-axially arranged closely adjacent each other.

7. A device as claimed in any one of claim 4 to 6, further comprising electrical adjusting means disposed within the body member and connected by way of electrical conductor means disposed within the body member to the light source.

8. A device as claimed in claim 7, wherein the electrical adjusting means comprises a potentiometer.

9. A device as claimed in any one of claim 4 to 8, further comprising a voltage source disposed within the body member for the light source.

10. A device as claimed in any one of the preceding claims, wherein the body member comprises two inter-connecting parts, each provided with respective inter-connecting elements which together provide an electrical connection.

11. A device as claimed in claim 10, wherein one of the two inter-connecting parts is provided with a cable, one end of which communicates with the electrical
 125 adjusting means and the other end of which is connectable to an evaluating device.

12. A device as claimed in any one of the preceding claims, further comprising a felt
 130 tipped pen disposed within the body

member, the stylus comprising the tip of the pen.

13. A drawing device substantially as
hereinbefore described with reference to the
5 accompanying drawings.

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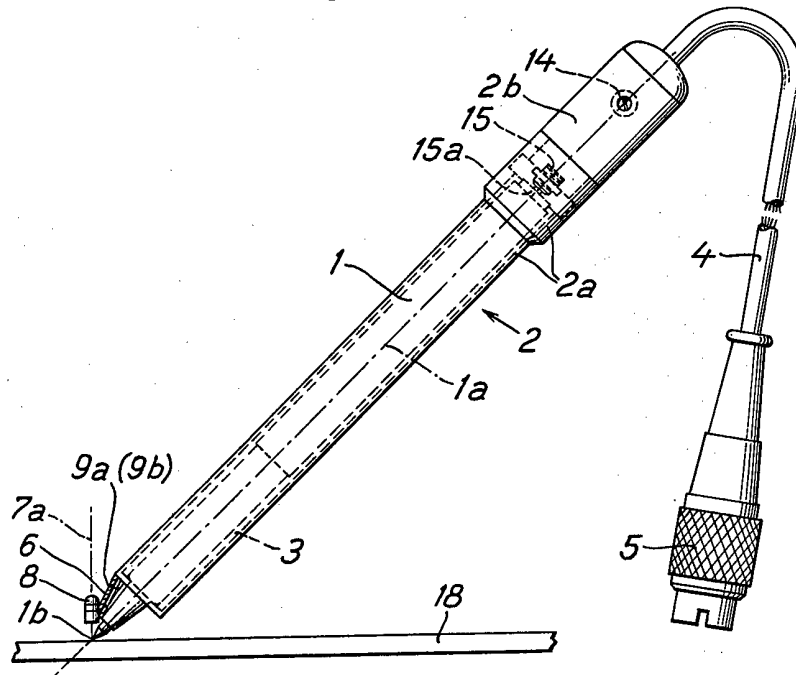
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COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale
Sheet 1

Fig. 1



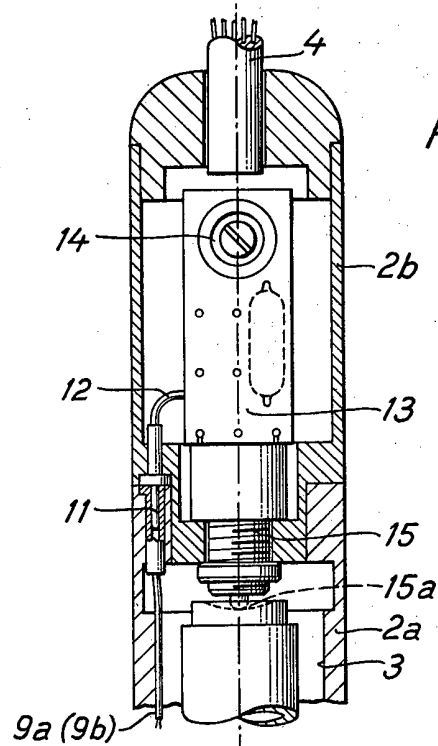


Fig. 3

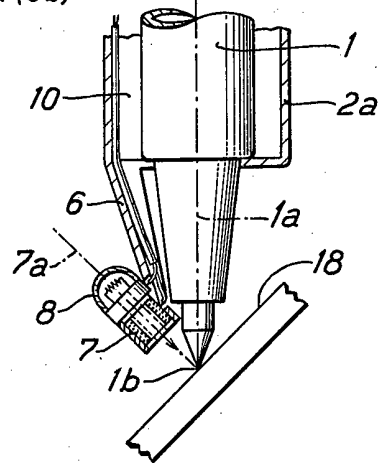


Fig. 2