Nov. 9, 1954

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2,693,788

MAGNETIC DESK PEN SET

Filed Oct. 4, 1952

Fig. 1

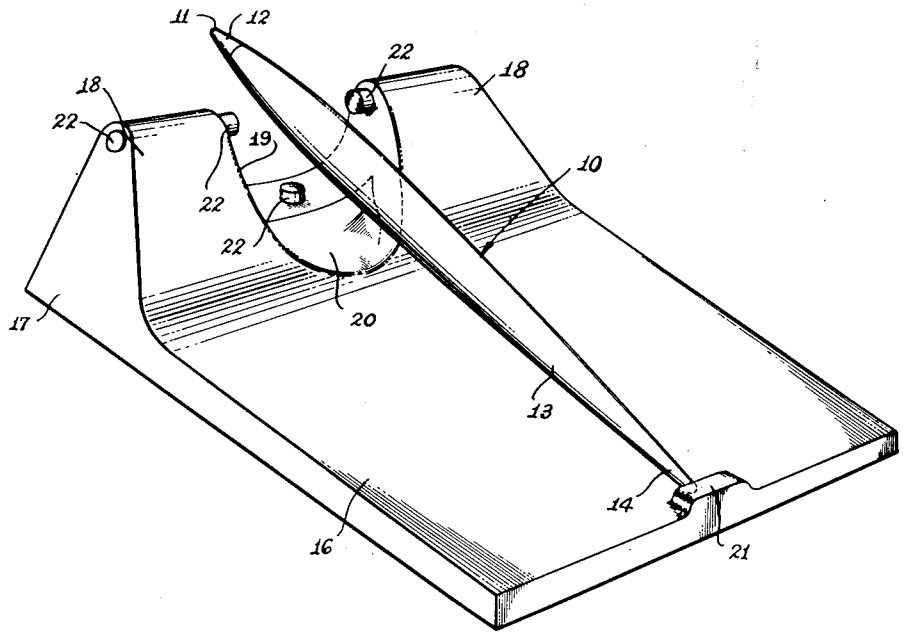
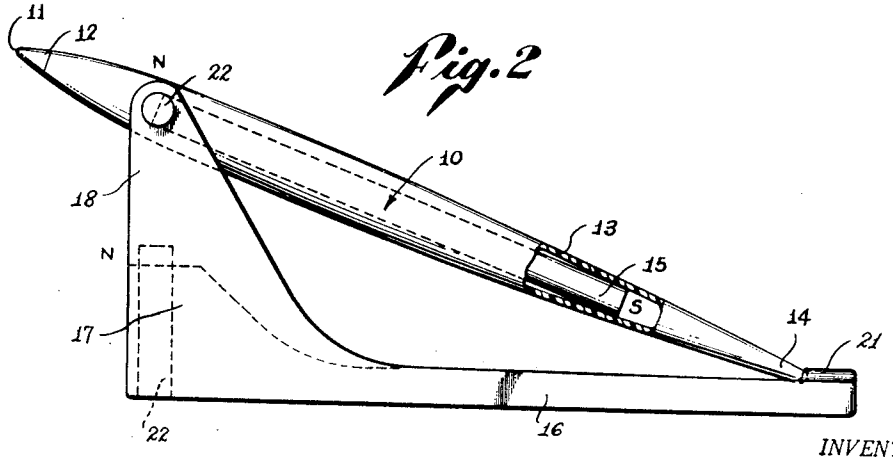


Fig. 2



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United States Patent Office 2,693,788
Patented Nov. 9, 1954

2,693,788

MAGNETIC DESK PEN SET

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Application October 4, 1952, Serial No. 313,115

4 Claims. (Cl. 120—108)

My invention relates generally to writing instruments, and more particularly to a desk pen set comprising a pen and holder which cooperate in a novel manner for holding the pen when not in use.

Briefly, the device involves the use of the principle of magnetic repulsion as a basis for supporting the pen relative to the holder. By the use of cooperating magnetic means within the pen and holder, the pen may be made to stand in an elevated angular position without physical support for the free end. The effect created is quite unique in appearance and tends to make the device an attractive desk ornament. In addition, the nature of the holder design is such as to hold the pen in a convenient position wherein it is instantly ready for use, and at the same time is held against accidental displacement. A preferred embodiment of the invention is designed in conjunction with a ball point pen, but the invention is not concerned with the character of the pen or writing instrument, and may be used with other types of writing instruments.

With the foregoing in mind, it is therefore a major object of the invention to provide a desk pen set having means for holding the pen in an upstanding angular position without physical support for the free end thereof.

Another object of the invention is to provide a pen holder having magnetic means for cooperatively supporting a pen having a magnetic element therein.

It is also an object of my invention to provide a pen holder having magnetic means operating on the principles of magnetic repulsion to hold a pen having a magnetic element therein in a stable elevated position without physical support for the free end thereof.

A further object of the invention is to provide a pen holder having symmetrically balanced magnetic means adapted to repulse a magnetic element of the same polarity into a central elevated position.

Still another object of my invention is to provide a pen holder of the class described which holds a writing instrument in a convenient position wherefrom it may be instantly withdrawn for use and is yet held against accidental displacement.

It is a still further object of my invention to provide a desk pen set which is unique and attractive in appearance and may be manufactured and sold at a nominal cost.

These and other objects and advantages of my invention will become apparent from the following detailed description of a preferred embodiment thereof, and from an inspection of the accompanying drawings, in which:

Fig. 1 is a perspective view of the pen holder showing the cooperating pen positioned thereon; and

Fig. 2 is a side elevation of the pen holder and pen with a section of the pen barrel broken away.

Referring now to the drawings, and particularly to Fig. 1 thereof, a writing instrument of conventional elongated cylindrical shape is designated by the numeral **10**. The device described herein is particularly advantageous for use with a ball-pointed writing instrument, because of the simplicity of the structure which is possible. Therefore, the writing instrument **10** is illustrated as a ball point pen having a small freely rotatable ball **11** mounted within a tip or nose socket **12**. Ball **11** is communicated rearwardly with an interior source of suitable ink contained within pen **10**, and is adapted to transfer a thin film of ink forwardly in writing. Because of the nature of the ink used and the design of the writing nose, it is not necessary to cover the pen **10** when not in use and it

may therefore be held as shown in an open position with tip **12** extended upwardly.

As is best seen in Fig. 2, pen **10** has a hollow barrel **13** providing a thin-walled shell which tapers both forwardly and rearwardly and is joined rigidly to the forward writing tip **12**. The rear end of barrel **13** is closed over in a slightly rounded point **14** on which the pen is adapted to stand. Within barrel **13** is a magnetic element **15** which is extended along the length thereof. Preferably, element **15** takes the form of an elongated permanent magnet of high retentivity and permeability. The opposite ends of magnet **15** are, of course, of opposite polarity, and as illustrated the rearwardly-facing end of the magnet is selected to be a so-called south pole, while the forwardly-facing end is a north pole.

The holder for pen **10** is formed with an elongated flat base **16** of rectangular shape. At one end of base **16** is an upstanding support or frame **17** which is smoothly filleted into base **16** and is formed integrally therewith. Preferably, the holder is formed as a molded plastic article and is relatively heavy and durable. The length of base **16** is just slightly less than the length of pen **10**, and the latter is adapted to overlie the base, extending centrally and longitudinally therealong with tip **12** elevated in an overhanging position.

As is best seen in Fig. 1, support **17** is divided into outer arms **18** by a longitudinally extending centrally cut opening **19** that is considerably larger than the diameter of pen **10** and is of trough-like shape. In cross-section, opening **19** is generally semi-circular, having a rounded bottom **20** tapering upwardly to join the arms **18**. As can be understood, when pen **10** is laid longitudinally along base **16**, the forward end of the pen extends through opening **19**. As the opposite end of base **16** is a small abutment **21** which is adapted to seat against the rear pen portion **14** and hold the pen against sliding longitudinally. Without further structure it can be seen that the force of gravity acting downwardly on the forward end of pen **10** would tend to cause the pen to fall to the bottom of trough **19**. However, I wish to hold the forward end of pen **10** upwardly and spaced from physical contact with the bottom wall **20** or the arms **18**. The pen then appears to be floating to provide an unusual appearance, and at the same time is in a position wherein it may be readily grasped by the fingers for lifting it from the holder for use.

In order to support the forward end of pen **10** in an elevated position within opening **19**, I provide magnetic means within support **17** which have a polarity the same as the polarity of the adjacent north pole of pen magnet **15**. These magnetic means are arranged symmetrically with respect to opening **19** and create within the opening a magnetic field which tends to repulse the like field of the north end of the pen magnet **15**. Since the pen **10** tends to fall under the force of gravity and is repulsed upwardly by the magnetic field within opening **19**, it reaches a position of equilibrium with the free forward end suspended in space and the rear end **14** resting against abutment **21**. Since the rear end of pen **10** is held downwardly against abutment **21** by the force of gravity, it can be seen that the pen cannot slide longitudinally out of the magnetic repulsing field and will remain at rest.

Preferably, these magnetic means take the form of a plurality of cylindrical bar magnets **22** which are mounted in frame **17** to extend radially outwardly from opening **19** in a plane perpendicular to the longitudinal axis of the opening. The inner ends of magnets **22** are projected through the wall surface of opening **19** to provide an exposed pole face. In accordance with the selection of the poles of pen magnet **15**, all of the exposed inner faces of magnets **22** are north poles of the same polarity as the adjacent north pole of the pen magnet. It is desirable that the forward end of the pen magnet **15** be positioned to terminate substantially at the plane of the holder magnets **22** in order that the maximum repulsion force can be achieved. As illustrated, a pair of opposed magnets **22** are extended horizontally through arms **18** and rigidly mounted therein, while a single magnet projects upwardly through bottom wall **20**.

In order to avoid the poles of the side magnets **22**, the magnet **15** within pen **10** seeks a position in the center

of opening **19** aligning the pen longitudinally along the holder. The bottom magnet **22** tends to repulse pen magnet **15** upwardly so that pen **10** is elevated toward the top of opening **19**, but this force is counteracted by the downwardly-directed force of gravity. Accordingly, the position of equilibrium of the forward end of pen **10** is near the radial center of opening **19** as illustrated.

Because of the nature of the holder, it can be seen that pen **10** is quite easily grasped in the fingers for lifting and is always ready for use. The visual effect that the free end of the pen is floating is quite unique, and the device therefore makes an attractive desk ornament.

While I have thus shown and described an embodiment of the invention which is fully capable of carrying out the aforementioned objects and advantages, modifications of design and construction will be apparent to those skilled in the art. Therefore, I do not wish to be restricted except as defined in the appended claims.

I claim:

1. A desk pen set comprising: a pen having a magnetic element therein; a pen holder having a base portion adapted to support one end of said pen and an upstanding frame provided with an enlarged opening therein adjacent the opposite end of said pen; and magnetic means mounted in said frame around said opening, the effective polarity of said magnetic means being the same as the polarity of said magnetic element when said pen is extended through said opening, whereby the end portion of said pen adjacent said opening is held in an elevated position spaced from and out of physical contact with said holder.

2. A desk pen set comprising: a pen having a magnetic element therein; a pen holder having a base portion adapted to support one end of said pen and an upstanding frame provided with an enlarged opening therein adjacent the opposite end of said pen; and a plurality of permanent magnets mounted in said frame and spaced around said opening, the polarity of said magnets being the same as the polarity of said magnetic element when said pen is extended through said opening with the opposite end seating on said base, whereby the end portion of said pen adjacent said opening is held in an elevated

position spaced from and out of physical contact with said holder.

3. A desk pen set comprising: a pen having a permanent magnet extended therealong; a pen holder having a base portion formed with an abutment to hold one end of said pen when extended downwardly at an angle thereagainst, and an upstanding frame provided with an enlarged trough-like opening therein adjacent the opposite end of said pen, said opening being materially greater than said pen; and a plurality of permanent magnets mounted in said frame and symmetrically spaced around said opening, the polarity of said magnets being the same as the polarity of the adjacent end of the pen magnet, whereby the end portion of said pen adjacent said opening is held in an elevated position spaced from and out of physical contact with said opening.

4. A holder for a pen provided with a magnetic element therein comprising, a base, a pair of upstanding arms near one end of the base, said arms being spaced to form an enlarged opening therebetween, an abutment carried by the other end of the base said abutment including a shoulder at a lower level than said opening to hold one end of the pen with the other end of the pen elevated and extending through said opening, a permanent magnet in each of said arms and in the base between said arms, said magnets being directed into said opening with poles of the same polarity as the polarity of the adjacent end of the pen magnet, whereby the elevated end of the pen is maintained in said opening and out of physical contact with the arms and base.

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