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 upright 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 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 upright position without physical support for the free end thereof.

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

It is also an 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 therein; 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 10 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 therefor. Therefore, the writing instrument 10 is illustrated as a ball point pen having a small freely rotatable ball 11 mounted within the 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 in a manner directly 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 rearward-facing end of the magnet is selected to be a so-called south pole, while the forward-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 height 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 overlapping 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. At the opposite end of base 18 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 pen 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 repelling field and will remain at rest.

Preferably, these magnetic means are disposed in 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 project 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 magnetic field 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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