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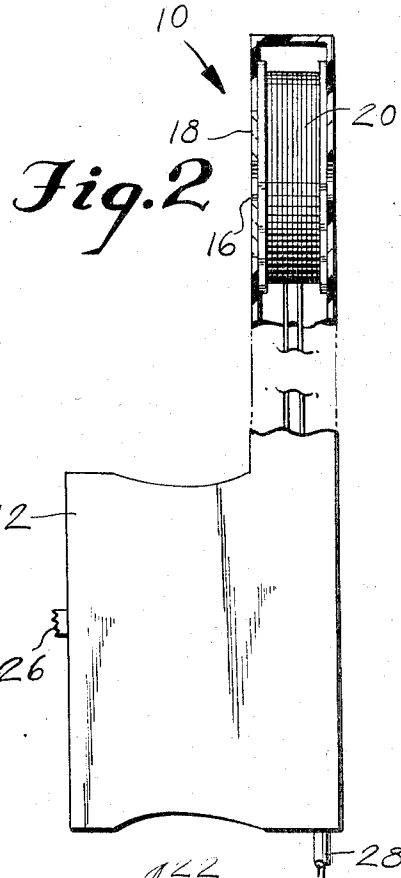
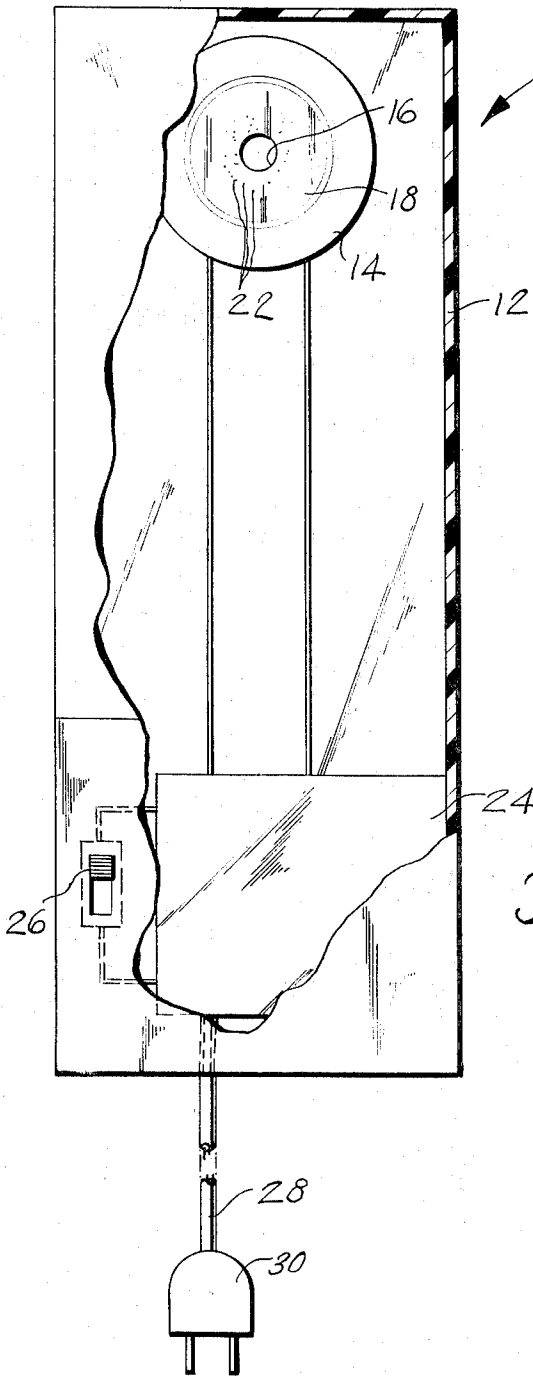
R. SENG

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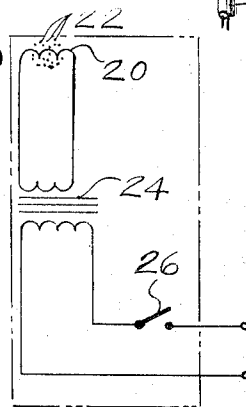
NAIL DETECTOR UTILIZING METALLIC PARTICLES

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*Fig.1*



*Fig.3*



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**NAIL DETECTOR UTILIZING METALLIC PARTICLES**

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1 Claim. (Cl. 324—41)

This invention relates to electro-magnetic devices for detecting metal, and more particularly to electro-magnetic devices for detecting nails and the like.

It is an object of the present invention to provide a nail detector device which will quickly and easily detect hidden nails by observing iron filings contained within the device.

Another object of the present invention is to provide a nail detector which will have coil and transformer means in order to effectively use alternating current to operate the device.

A further object of the present invention is to provide a nail detector which will have an opening in which will be inserted a pencil to mark the location of the nail after it has been found through the use of magnetic flux.

Other objects of the invention are to provide a nail detector bearing the above objects in mind which is of simple construction, has a minimum number of parts, is inexpensive to manufacture and efficient in operation and use.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawing, in which:

FIGURE 1 is a top plan view of the present invention shown partly broken away;

FIGURE 2 is a side view of FIGURE 1; and

FIGURE 3 is a schematic wiring diagram of the invention.

Referring now more in detail to the drawing, a nail detector 10 made in accordance with the present invention is shown to include a hollow, rectangular case 12 made of plastic or other suitable material. A spool 14 is received within one end of case 12 and is provided with an opening 16 which aligns with similar openings through case 12. Opening 16 provides a means for inserting a pencil in order to mark the location of the nail after it has been found with the device 10. A clear transparent face 18 through case 12 is secured within case 12 over spool 14 for a purpose which hereinafter will be described. A coil 20 is received upon spool 14 and provides a means for magnetically exciting a plurality of iron filings 22 which are observed through face 18 of case 12. Coil 20 is connected to one side of power transformer 24 which is secured within the other end of case 12, and a switch 26 is in series with the other side of power transformer 24 and provides a means for shutting off or opening and closing the electrical circuit of the nail detector 10.

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Nail detector 10 is provided with a cord 28 having a male plug 30 to provide a means for plugging the device into an electrical receptacle.

In operation, the user slides switch 26 to the on position, whereupon coil 20 is energized and creates a magnetic field. Case 12 is held in the hand and is slid along the surface where the hidden nails are to be located, and when the opening 16 passes over a nail head, the iron filings 22 will have a tendency to collect over the nail head, but the inner wall of spool 14 will only permit them to gather around the opening 16. When the iron filings 22 gather around the opening 16 of spool 14, a pencil is inserted into opening 16, and the operator can thus mark the location of the nail.

It shall further be noted that the shape of the case 12 may be varied in its structural configuration.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claim.

What I claim as new and desire to protect by Letters Patent of the United States is:

A nail detector device comprising, in combination, a hollow, rectangular plastic case, a transformer secured within one end of said case providing means for stepping down the voltage supplied by a conventional power source, a coil of wire secured within the other end of said case, a spool adapted to carry said coil of wire, the output winding of said transformer electrically connected to said coil, said spool having a hollow compartment therein carrying a plurality of iron filings, said spool having an opening to provide means for inserting a pencil to mark the location of a hidden nail after it has been found by the use of said detector, a circular clear plastic face carried by said case above said coil and core providing means for observing the formation of said filings, a switch carried by said case, said switch being in series with one side of said transformer providing means for opening and closing the electrical circuit of said device.

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