

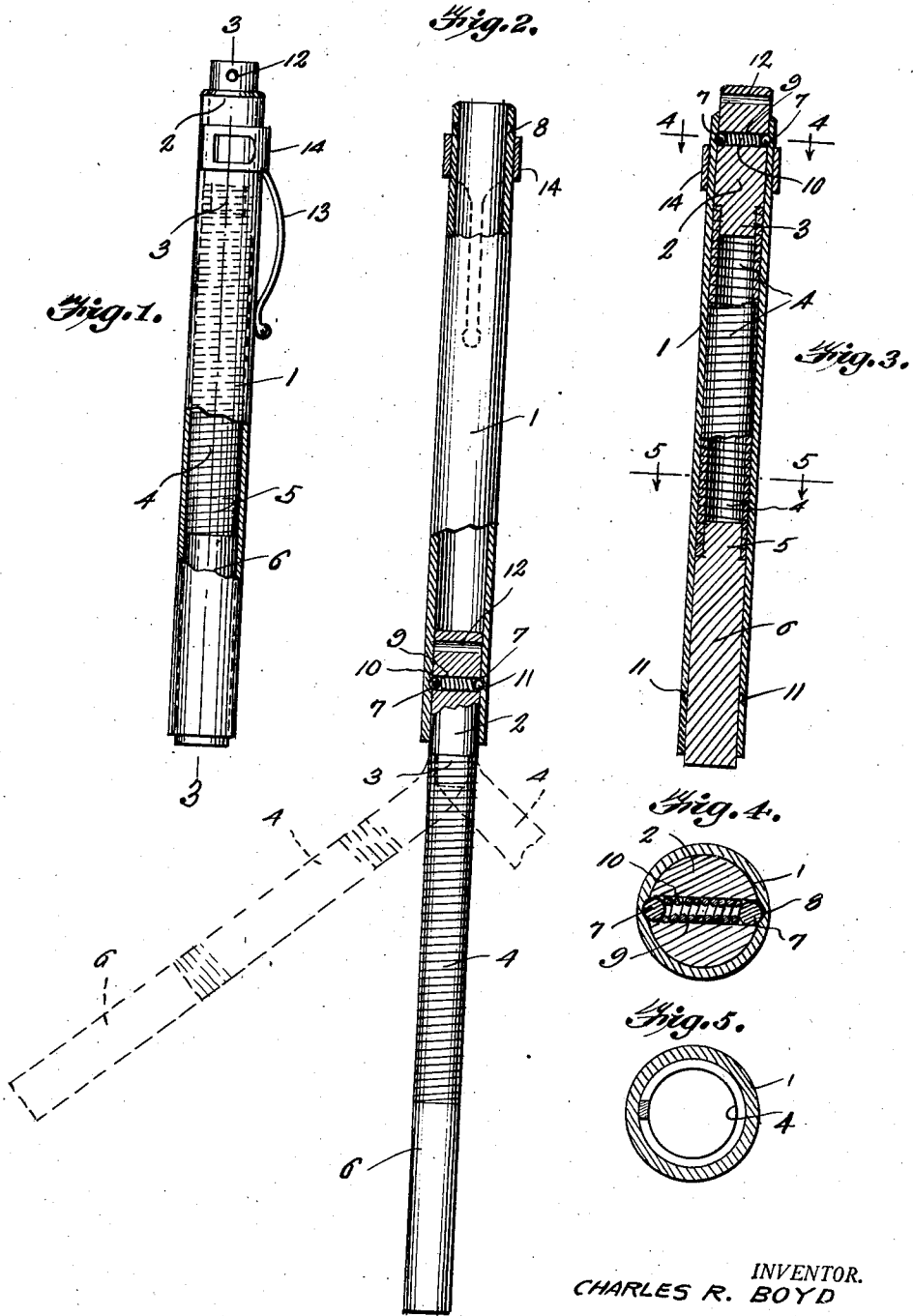
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C. R. BOYD

MAGNET

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INVENTOR.
CHARLES R. BOYD

BY

Ray J. Woodward

UNITED STATES PATENT OFFICE

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MAGNET

Charles R. Boyd, Detroit, Mich.

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This invention relates to a magnet and it is one object of the invention to provide a magnet which is particularly useful to metal workers who apply rivets and the like in confined spaces or as fasteners for metal sheets or the like in such positions that it is difficult to apply the fastener and many are lost due to the fact they slip out of a workman's hands and become lost.

Another object of the invention is to provide a magnet of such form and construction that it may be inserted or lowered into a confined space through a small opening and a metal object attracted to the magnet so that it will be held by the magnet and recovered after being dropped in a small and poorly lighted space by a workman.

Another object of the invention is to provide a magnet so mounted that when it is thrust into a space of irregular shape it may follow curvatures in the space and arrive at such position that it may attract the dropped article to it.

Another object of the invention is to provide a magnet having a carrier in the form of a hollow tubular member into which the magnet is thrust and enclosed when not in use, the tubular member constituting a handle for manipulating the magnet when in use and being provided with a clip so that it may be placed in a pocket and held in the pocket when not in use.

Another object of the invention is to provide a magnet wherein the spring carrying the bar-magnet has its inner end carried by a block which is provided with a latch for limiting its sliding movement through the tubular casing or handle and has one end formed with an opening so that if the lost article has dropped into a deep cavity, or the like, a string may be tied through the opening and the magnet lowered into the cavity to a position where it will attract the lost article to it and then be withdrawn.

Another object of the invention is to provide a device of this character which is simple in construction and inexpensive to manufacture.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a view showing the improved magnet principally in side elevation and partially in longitudinal section.

Figure 2 is a view partially in side elevation and partially in section, showing the magnet extended from the casing or handle in position for use.

Figure 3 is a sectional view taken longitudinally through the magnet when in a retracted position, the view being taken along the line 3—3 of Figure 2.

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Figure 4 is a sectional view taken along the line 4—4 of Figure 3.

Figure 5 is a sectional view taken along line 5—5 of Figure 3.

This improved magnet has a handle or casing 1, which is formed of strong metal tubing and is open at both ends. A block 2 formed of metal is slidably mounted in the tubular handle or casing and has its lower end of reduced diameter to form a neck 3 about which is firmly mounted the rear or upper end of a helical spring 4 having its front end mounted firmly about the neck 5 of a permanent magnet 6. This magnet is a solid metal bar circular in cross section and the combined length of the block 2, the spring 4, and the bar magnet 6 is such that when the magnet is in the retracted position of Figure 3 the upper portion of the block will protrude slightly from the rear end of the tubular casing 1. Therefore pressure may be applied to the protruding end of the block and the block forced forwardly to such an extent that the latching balls 7 will be moved out of the groove or seat 8 and the bar magnet will move forwardly to the extended position for use shown in Figure 2. The latching balls are slidably mounted in end portions of an opening 9 formed diametrically through the block and pressed outwardly by a spring 10 in the opening. Therefore, when the magnet 6 is thrust into the casing, the balls 7 will engage in the seat 8 and held in the retracted position. When the magnet is moved to the extended position the latching balls engage in the annular groove or seat 11 near the front end of the casing and stop forward movement of the magnet as well as preventing undesired rearward or inward movement of the magnet while it is in use. Since the latching balls are under pressure of the spring the magnet and the block, together with the spring 4, may be bodily removed from the casing if so desired and during manufacture of the device they may be easily thrust into the casing and the device quickly assembled. An opening 12 is formed through the upper end of the block so that a string or wire may be passed through this opening and the magnet lowered into a deep cavity and then withdrawn after picking up bolts or other articles which have dropped into the cavity.

When this magnet is in use it is grasped by the casing or handle and pressure applied to the rear end of the block so that the bar magnet 6 and the spring 4 will move out of the front end of the casing, forward movement thereof being stopped when the latching balls 7 engage in the

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groove or seat 11. The magnet may then be thrust into a cavity or other small space into which a workman can not readily thrust his hand and bolts or other small metal objects therein will be attracted to the magnet and be carried out of the cavity when the magnet is withdrawn. Since the bar magnet is carried by a spring capable of being flexed transversely in all directions, as indicated by dotted lines in Figure 2, the bar magnet and the spring may follow an irregular path while fishing for the articles to be removed. If the cavity is of such depth then the bar magnet will not touch its bottom when the workman is grasping the handle or casing 1, a string or wire may be secured through the opening 12 and the magnet lowered in the cavity to the bottom thereof and then withdrawn. A clip 13 having a clamp 14 is carried by the casing near the upper end thereof so that when the device is not in use it may be placed in a pocket and the clip engaged with a portion of the pocket to prevent the device from accidentally dropping when a workman leans over.

Having thus described the invention, what is claimed is:

1. A device of the character described, comprising a tubular casing constituting a handle, a block slidable through said casing and having a reduced front end portion constituting a neck, a helical spring slidable through said casing and having its rear end portion mounted about the neck of said block, a bar magnet slidable through said casing and having its rear end portion formed with a neck about which the front end of said spring is mounted, said casing having front and rear end portions each formed with an internal annular groove, said block being formed with a diametrically extending opening, latching balls in end portions of said opening, a spring in said opening urging said balls outwardly and causing the balls to enter said grooves and releasably hold the block in end portions of the casing, the block being formed with another diametrically extending opening rearwardly of the first opening and disposed externally of the casing when the block is in the rear end portion of the casing whereby a linear member may be secured through the rear opening for lowering and raising the said device while using the same.

2. A device of the character described compris-

ing a tubular casing, a block, a helical spring having its rear end connected with the front end of said block, a bar magnet having its rear end connected with the front end of said spring, the block and the spring and the magnet being slidably received in said casing for movement as a unit from a retracted position in the casing to a forwardly extended position for use, the combined length of the block and the spring and the magnet being greater than the length of the casing whereby the block projects from the rear end of the casing when retracted, and a member carried by said block and engageable with end portions of the casing to limit sliding movement of the block in the casing.

3. A device of the character described comprising a tubular casing, a block, a magnet, a spring extending between and secured at its ends to ends of the block and the magnet, the block and the spring and the magnet being slidable as a unit through the casing from a retracted position to an extended position for use in which the spring projects for substantially its entire length from the front end of the casing and serves as a transversely flexible carrier for the magnet at its front end, and the magnet and the spring and the block being also removable as a unit from the casing through an end thereof and having a combined length greater than the length of the casing whereby the rear end portion of the block projects from the rear end of the casing when the spring and the magnet are shifted rearwardly into the casing to a retracted position.

CHARLES R. BOYD.

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