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3,229,820

MAGNETIC HOLDER

Filed April 8, 1963

2 Sheets-Sheet 1

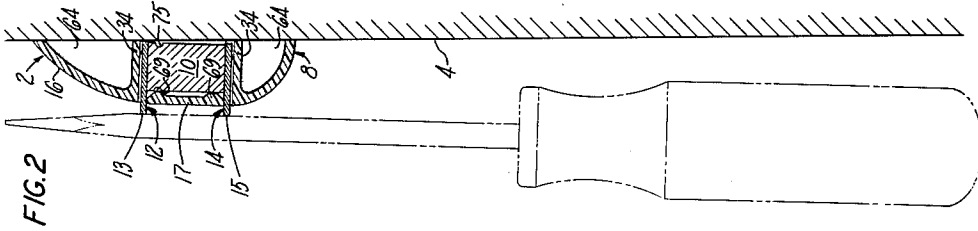


FIG. 2

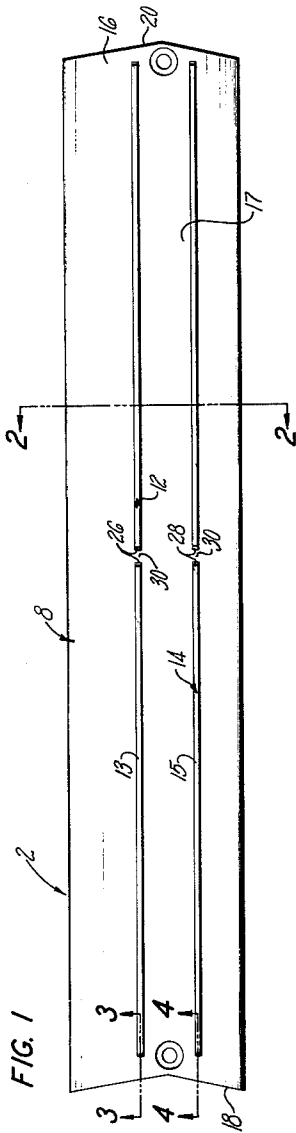


FIG. 1

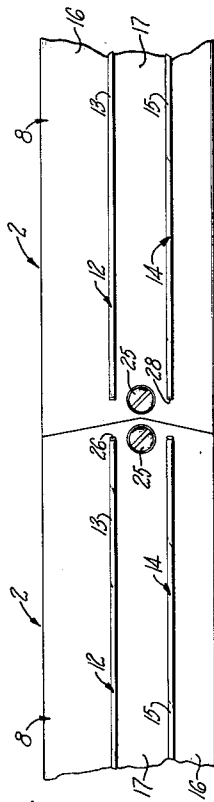


FIG. 5

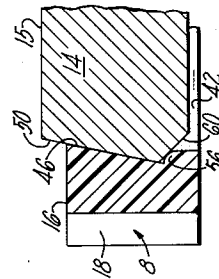


FIG. 4

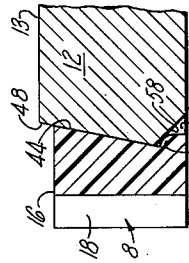


FIG. 3

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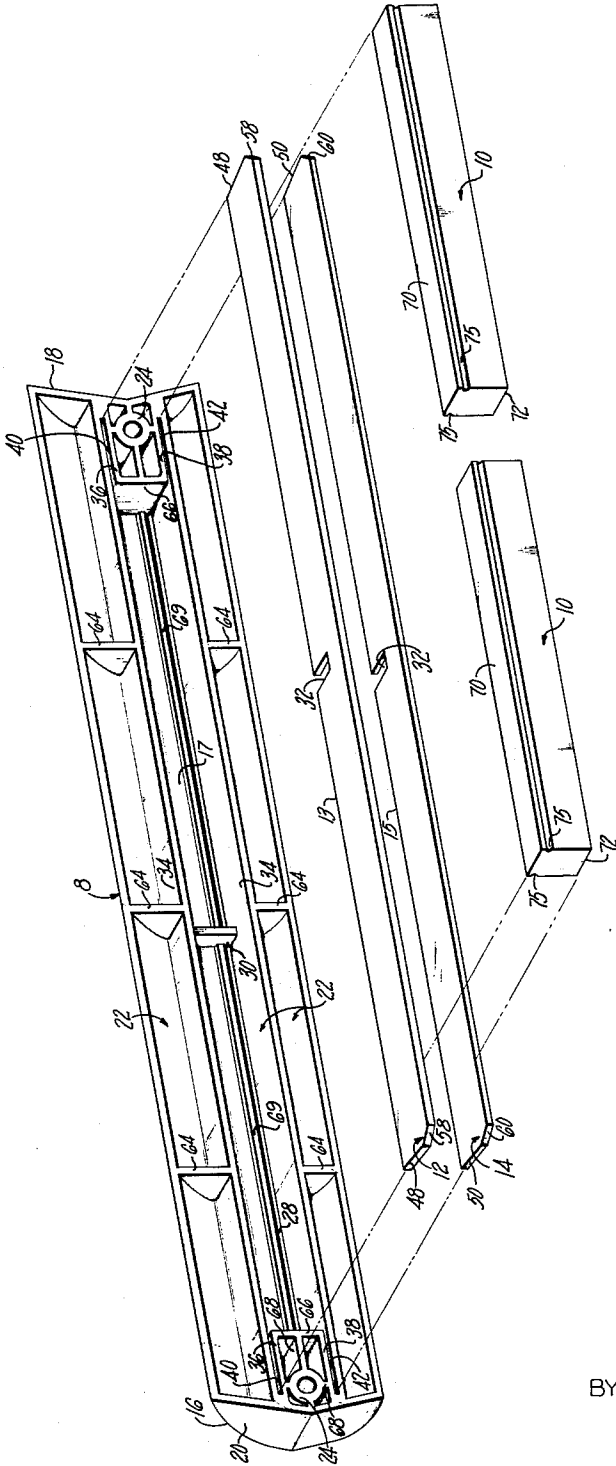


FIG. 6

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MAGNETIC HOLDER

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 5 Claims. (Cl. 211-60)

This invention relates to magnetic holders and more specifically to an improved magnetic holder particularly suitable for retaining implements such as screwdrivers, knives, etc., when such implements are not in use.

One of the objects of the present invention is to provide a magnetic holder that will effectively retain various articles while having an improved construction including a minimum number of parts which may be easily and quickly assembled in place wherein they will remain secured against movement.

A further object of the present invention is to provide an improved magnetic holder incorporating a novel indicator means which facilitates the proper orientation of the holder with respect to another similar or identical magnetic holder placed in end-to-end relationship therewith so as to insure that the magnetic pole pieces of each of the holders will be positioned with uniform polarity.

A still further object of the present invention is to provide such an improved magnetic holder that will retain implements in a position which is most convenient from the standpoint of manipulating the implements while retained on the holder such as for example, during removal of the implement from the holder.

A still further object of the present invention is to provide an improved magnetic holder which will attain the above objects while possessing a construction that is economical to manufacture and which will provide effective service over long periods of repeated and rugged use.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application which will be indicated in the appended claims.

FIG. 1 is a front elevational view of a magnetic holder constructed in accordance with the present invention;

FIG. 2 is a cross-sectional view taken generally along lines 2-2 of FIG. 1 and additionally showing (in phantom) a screwdriver retained on the holder;

FIG. 3 is an enlarged cross-sectional view in fragment taken generally along lines 3-3 of FIG. 1;

FIG. 4 is an enlarged cross-sectional view in fragment taken generally along lines 4-4 of FIG. 1;

FIG. 5 is a front elevational view in fragment of two magnetic holders embodying the invention illustrated in mating relationship with each other; and

FIG. 6 is an exploded-perspective view of the magnetic holder taken from the rear side thereof.

Referring to the drawings in detail, a magnetic holder generally designated 2 embodying the invention is shown as being of the type that in use is usually mounted to a wall 4 or the like, whereon it serves to retain implements such as the screwdriver 6 in a generally vertical plane spaced from the wall 4 as best shown in FIG. 2.

As best shown in FIG. 6 the illustrated magnetic holder 2 is basically comprised of a casing 8, a pair of permanent magnets 10 and a pair of upper and lower pole pieces 12, 14, respectively.

In the illustrated embodiment the casing 8 has an elongated body molded from a suitable resilient, high

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impact material such as polystyrene and including a front wall 16 preferably formed with a convex cross section; and a pair of end walls 18 and 20 enclosing an area 22 which is open at the rear of the casing 8. A pair of apertured bosses 24 are integrally formed at the opposite ends of the casing for receiving mounting screws 25 utilized to secure the holder 2 to the wall 4. The front wall 16 of the casing is provided with a first longitudinally extending slot 26 dimensioned to receive the upper pole piece 12; and a second longitudinally extending slot 28 spaced below the first slot 26 and dimensioned to receive the lower pole piece 14. The slots 26, 28 are spaced by a web portion 17 forming a portion of the casing front wall 16 between the slots 26, 28, which web portion 17 is reinforced intermediate its ends by a bridge 30 across the slots 26, 28 connecting the web 17 with the remainder of the front wall 16.

The upper and lower pole pieces 12, 14 which are shown as being elongated, are formed from any suitable material such as cold rolled steel preferably plated such as with zinc. The front portions of the pole pieces 12, 14 are adapted to be received in the slots 26, 28, respectively, in the front wall 16 of the casing so as to dispose the front edges 13, 15 of the pole pieces 12, 14 externally in spaced relationship to the front wall and in generally aligned relationship with each other. The pole pieces 12, 14 are provided with enlarged notches 32 intermediate the ends thereof as shown in FIG. 6, to thereby accommodate manufacturing variations in the bridge portion 30 in the front wall 16 of the casing.

Referring to FIG. 6, in the shown embodiment the pole pieces 12, 14 are positioned in the casing 8 in overlying and spaced relationship with each other by means of a pair of longitudinally extending partitions 34, integrally formed in the casing and extending from end-to-end thereof. A pair of vertically spaced planar portions 36, 38 are integrally provided at each end of the casing between the partitions 34 and spaced therefrom so as to provide a pair of channels 40, 42 at each end of the casing dimensioned to receive the pole pieces 12, 14.

Referring to FIGS. 3 and 4, the pole pieces 12, 14 are held in the channels 40, 42 of the casing by means including the inner surface portions 44, 46 of the end walls 18, 20 which are formed in an inclined fashion whereby they converge toward the front wall 16. Each of the ends of the pole pieces 12, 14 are similarly tapered inwardly at portions 48, 50 thereof and the length of the pole pieces is such that when the latter are inserted in the channels 40, 42 of the casing, the end portions 48, 50 of the pole pieces 12, 14, respectively, will engage the inner surface portions 44, 46 of the end walls 18, 20 to thereby hold the pole pieces in the casing against movement towards the front wall 16 thereof.

In order to maintain the pole pieces 12, 14 in the casing against rearward movement, the inner surfaces of each of the end walls 18, 20, at the rear side of the casing are provided with a pair of integral projections 54, 56 extending laterally inwardly and dimensioned to engage the rear end portions 58, 60 of the pole pieces which portions 58, 60 are shown diverging toward the front wall 16 and reversely tapered with respect to the end portions 48, 50 of the pole pieces as best shown in FIGS. 3 and 4.

In accordance with one aspect of the invention the upper projections 54 at the opposite ends of the casing extend toward the front wall of the casing for a lesser distance than the lower projections 56 so as to position the front edges 13, 15 of the pole pieces 12, 14 in a plane which extends at an angle of, say, about 2° with respect to the wall 4 or the like when the holder is mounted thereon as shown in FIG. 2. This disposition of the pole piece edges 13, 15 permits the implement to be retained on the

holder in a position which facilitates the manipulation thereof such as for removal from the holder.

Referring to FIG. 6, the casing 8 is reinforced in the shown embodiment by means of a plurality of transversely extending ribs 64 integrally formed in the casing so as to interconnect the front wall 16 and the longitudinal partitions 34, the partitions 34 themselves also serving as a reinforcing means for the casing 8. To this end, there is additionally provided transversely extending ribs 66 interconnecting the planar portions 36, 38 at the opposite ends of casing; and the spokelike ribs 68 for the mounting bosses 24. Also, as shown in FIGS. 2 and 6, the web 17 of the front wall is reinforced by longitudinally extending ribs 69.

The permanent magnets 10 are formed from any suitable material such as an extruded rubberlike plastic material loaded with permanent magnet particles and each magnet 10 has opposite and parallel flat pole faces 70, 72, the pole faces 70 being the north pole while the pole faces 72 being the south pole in the shown embodiment. The permanent magnets 10 are dimensioned to be received longitudinally in the casing with the north pole faces 70 engaging the upper pole piece 12 and with the south pole faces 72 engaging the lower pole pieces 14. The magnets 10 are held in the casing by means of the magnetic engagement with the pole pieces 12, 14 as well as by means of their fit between the pole pieces.

A pole indicator means is provided on the magnets 10 for facilitating the placement thereof in the casing so that the north pole faces 70 will engage the same pole piece and the south pole faces 72 will engage the other pole piece. In the shown embodiment this means is provided by a plurality of longitudinally extending grooves 75 formed in the magnets 10 on opposite sides thereof and extending between the ends thereof. The grooves 75 are positioned adjacent the north pole 70 so that when the grooves are aligned the north poles 70 of the magnets 10 will be properly positioned to engage the same pole piece, shown as 12, and the south poles 72 will be properly positioned to engage the other pole pieces, shown as 14.

In many practical applications of magnetic holders such as of the type described, a plurality of magnetic holders are arranged in end-to-end relationship as illustrated in FIG. 5, so as to form in effect one continuous holder. In order to make full use of the holding power of each of the individual holders it is important that the individual holders be arranged with uniform polarity between their pole pieces. Additionally, it is highly desirable that the holders be arranged with uniformity of appearance.

In accordance with another aspect of the invention, an indicator means is provided for facilitating the orientation of one magnetic holder with respect to another similar or identical magnetic holder so that a uniform polarity of the pole pieces is obtained which of course in the shown embodiment is characterized by the longitudinal alignment of the pole pieces having the same polarity. This indicator means is provided by forming the opposite ends of the casing 8 with complementary male and female portions which in the shown embodiment is accomplished by forming one end wall 18 of the casing to present a generally V-shaped recess and forming the other end wall 20 of the casing to present a generally V-shaped projection, complementary in shape to the recess formed by the end wall 18. Thus, when it is desired to mount two or more holders 2 to a wall in end-to-end relationship, the ends of the two adjacent holders are merely placed in matched registry as shown in FIG. 5, wherein the holders will be positioned with uniform polarity of the pole pieces.

Assembly of the magnetic holder is simply accomplished by first inserting the pole pieces 12, 14 in the casing from the rear opening thereof, so that the pole pieces are disposed in the channels 40, 42 with the front portions of the pole pieces extending through the slots 26, 28 in the front wall 16 of the casing to thereby expose the

pole piece edges 13, 15. Insertion of the pole pieces in this manner, despite the distance between the projections 54, 56, on the end walls of the casing, being less than the length of the pole pieces 12, 14 is permitted by the resilient nature of the casing material which permits the projections 54, 56 to be deformed laterally outwardly by the ends of the pole pieces during the insertion thereof and until the inclined end portions 58, 60 of the pole pieces are brought into engagement with the projections 54, 56 (as shown in FIGS. 3 and 4). This final positioning of the pole pieces is characterized by a snap action accompanied by the return of the projections 54, 56 (under the inherent resiliency of the casing) to their normal position wherein they prevent rearward movement of the pole pieces 12, 14 while positioning them so that their front edges 13, 15 lie in the slightly inclined plane described above.

The assembly is completed by inserting the permanent magnets 10 in the casing between and in engagement with the pole pieces and with the grooves 75 in the magnets aligned so as to insure that each of the pole pieces will be contacted by pole faces of the same polarity.

When the magnetic holder 2 is mounted on the wall or the like for use, access to and manipulation of the articles retained by the holder is not only made convenient by the extra space afforded between the article and the wall below the holder, but additionally by the extra space afforded between the article and the holder itself due to the convex curvature of the front wall of the casing. This latter consideration is particularly significant when articles of relatively small length are retained on the holder. The convex curvature of the front wall of the casing also minimizes accidental fulcruming thereagainst, of the retained articles thereby minimizing injury to holder casing as well as accidental dislodgment of an article occasioned by such fulcruming.

Thus, from the foregoing it will be seen that the present invention provides an improved magnetic holder which has an enhanced appearance and is comprised of a minimum number of parts that may be easily and quickly assembled in secure inter-relationship and that are economical to manufacture.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

We claim:

1. A magnetic holder assembly comprising a resilient casing having a front wall and a pair of end walls at opposite ends of the front wall enclosing an area with the edges of the walls defining a rear opening in the casing, said front wall having a plurality of longitudinally extending and transversely spaced apertures dimensioned to receive a plurality of pole pieces, a pair of pole pieces positioned longitudinally in the casing in overlying and spaced relationship with each other, said pole pieces having front portions extending through said apertures including front edges positioned externally of the front wall of the casing, at least one permanent magnet positioned in the casing between the pole pieces and having opposite pole faces of opposite polarity engaging the pole pieces respectively, the end walls of the casing having inclined inner surfaces extending substantially from the front to the rear of the casing and converging towards the front wall of the casing, portions of the ends of the pole pieces having inwardly tapered edges being in engagement with said surfaces and being inclined similarly thereto whereby the pole pieces are held against movement towards the front wall of the casing, said surfaces of the casing terminating adjacent said rear opening in a plurality of projections extending laterally inwardly from the end walls of the casing, the ends of the pole pieces having portions reversely tapered with respect to said first end portions and being in engagement with said projections whereby the pole pieces are

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secured in the casing against rearward movement through the opening in the casing, said projections on the end walls of the casing being dimensioned and arranged such that the front edges of the pole pieces lie in a plane inclined to the plane of said rear opening of the casing.

2. A magnetic holder assembly comprising a resilient casing having a front wall and a pair of end walls at opposite ends of the front wall enclosing an area with the edges of the walls defining a rear opening into the area, said front wall having a plurality of apertures dimensioned to receive a plurality of pole pieces, a pair of pole pieces positioned longitudinally in the casing in overlying and spaced relationship with each other, said pole pieces having front portions extending through said apertures, a pair of permanent magnets positioned in the casing between the pole pieces and having opposite pole faces of opposite polarity engaging the pole pieces respectively, said magnets having longitudinal grooves positioned in inter-alignment and indicating the polarity of the pole faces on the magnets, the end walls of the casing having inclined inner surfaces extending substantially from the front to the rear of the casing and converging toward the front wall of the casing, the ends of the pole pieces including inwardly tapered edges being inclined similarly to said surfaces and being in engagement therewith whereby the pole pieces are held against movement towards the front wall of the casing, means on the casing preventing movement of the pole pieces in a rearward direction through said opening in the casing and for positioning the pole pieces with the front edges of the pole pieces lying in a plane inclined to the plane of said opening in the casing, the end walls of the casing being configured to provide a pair of complementary male and female portions each adapted to be respectively mated with the ends of other similar holders for providing a uniform polarity.

3. A magnetic holder assembly comprising a casing having a front wall and a pair of end walls at opposite ends of said front wall enclosing an area with the edges of the walls defining a rear opening in said casing, said front wall having a plurality of apertures dimensioned to receive pole pieces, a pair of pole pieces positioned longitudinally in said casing in overlying and spaced relationship with each other, said pole pieces having front portions extending through the apertures in said front wall, at least one permanent magnet positioned in said casing between said pole pieces and having pole faces of opposite polarity engaging the pole pieces respectively, abutments formed of resilient and deformable material on said end walls of the casing adjacent the rear opening therein, said end walls of said casing having inclined, converging inner surfaces extending from said abutments toward said front wall of the casing, and said pole pieces having generally V-shaped projecting ends with diverging rear edges engageable with said abutments for securing the pole pieces against rear-

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ward movement toward the rear opening in the casing, and inwardly tapered edges being similarly inclined and in engagement with said inner surfaces on the end walls of the casing to hold the pole pieces against forward movement toward the front wall of the casing.

4. A magnetic holder assembly comprising a casing having a front wall and a pair of end walls at opposite ends of said front wall enclosing an area with the edges of the walls defining a rear opening in said casing, said front wall having a plurality of apertures dimensioned to receive pole pieces, a pair of pole pieces positioned longitudinally in said casing in overlying and spaced relationship with each other, said pole pieces having front portions extending through the apertures in said front wall, at least one permanent magnet positioned in said casing between said pole pieces and having pole faces of opposite polarity engaging the pole pieces respectively, abutment means of resilient and deformable material on said end walls of the casing adjacent the rear opening therein for securing the pole pieces against rearward movement toward the rear opening in the casing, said end walls of the casing having inclined inner surfaces converging toward said front wall of the casing, said inclined inner surfaces extending substantially from the rear to the front of the casing between the abutment means and said front wall, said pole pieces having the ends thereof engaging the abutment means and having inwardly tapered edges engaging said inner inclined surfaces of the end walls, the abutment means engaging one of said pole pieces being positioned further from a plane including the edges of the walls defining the rear opening in the casing than the abutment means engaging the other of said pole pieces for maintaining the pole pieces in a similarly inclined position with the end walls so that the front edges of the pole pieces lie in a plane inclined to said plane including the edges of the walls defining the rear opening in the casing.

5. The magnetic holder assembly as defined in claim 4 wherein the front wall of the casing has a convexly curved transverse cross section.

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