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(54) **PALM WRENCH FOR 1911 STYLE PISTOL
BARREL BUSHING**

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(57) **ABSTRACT**

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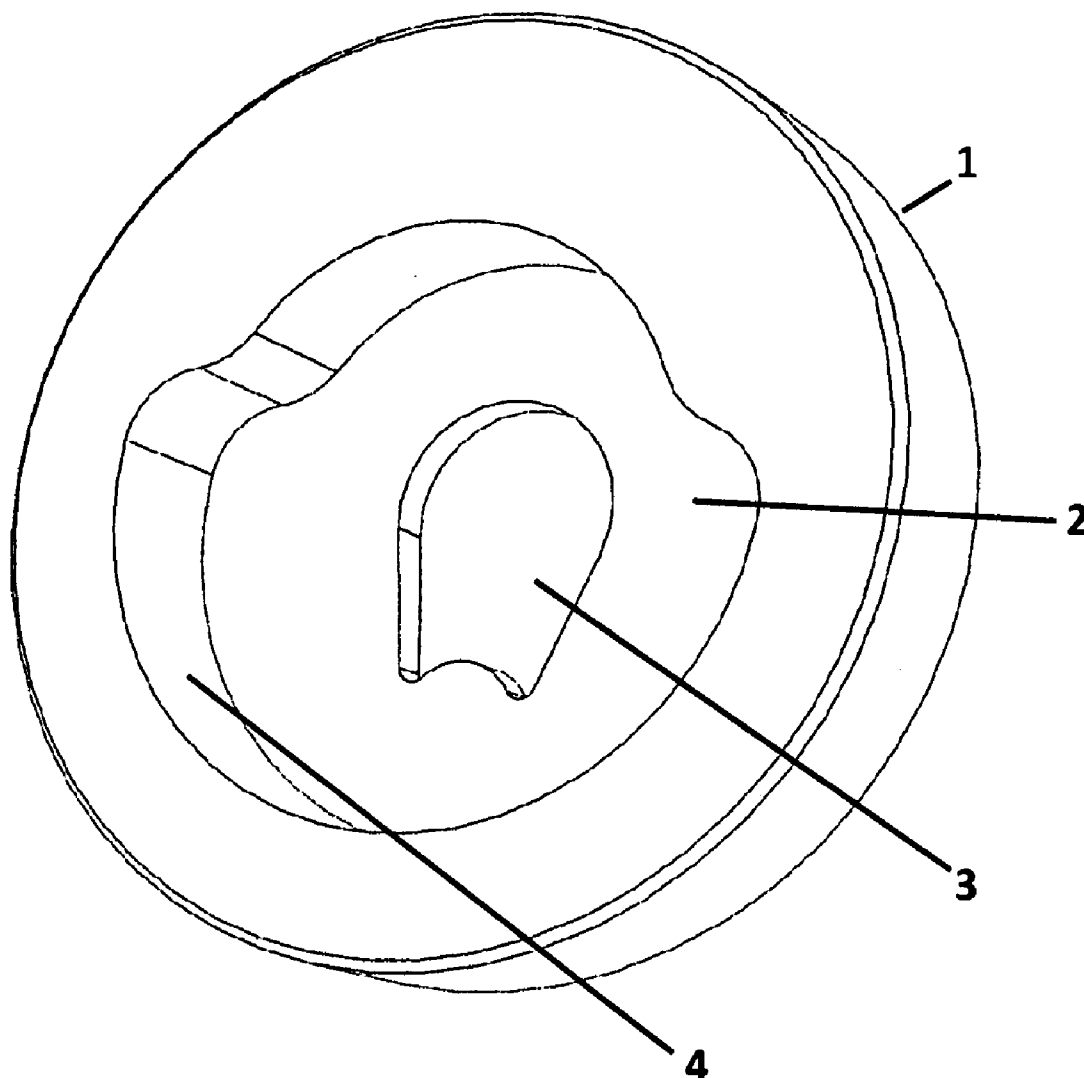
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Related U.S. Application Data

(60) Provisional application No. 61/461,838, filed on Jan.
24, 2011.

A handgun bushing removal tool, designed to encompass the end of the slide, to facilitate the safe and rapid removal and replacement of the barrel bushing on a 1911 type semi-automatic pistol. The tool contains an aperture generally conforming to the shape of a 1911 barrel bushing, which the bushing passes through, which when held in the palm of the hand, allows direct pressure to be applied to the spring plug while the tool is rotated. The tool is also designed to limit the rotation of the bushing by contacting the slide wall with the end of the slide when the correct amount of rotation has been achieved.



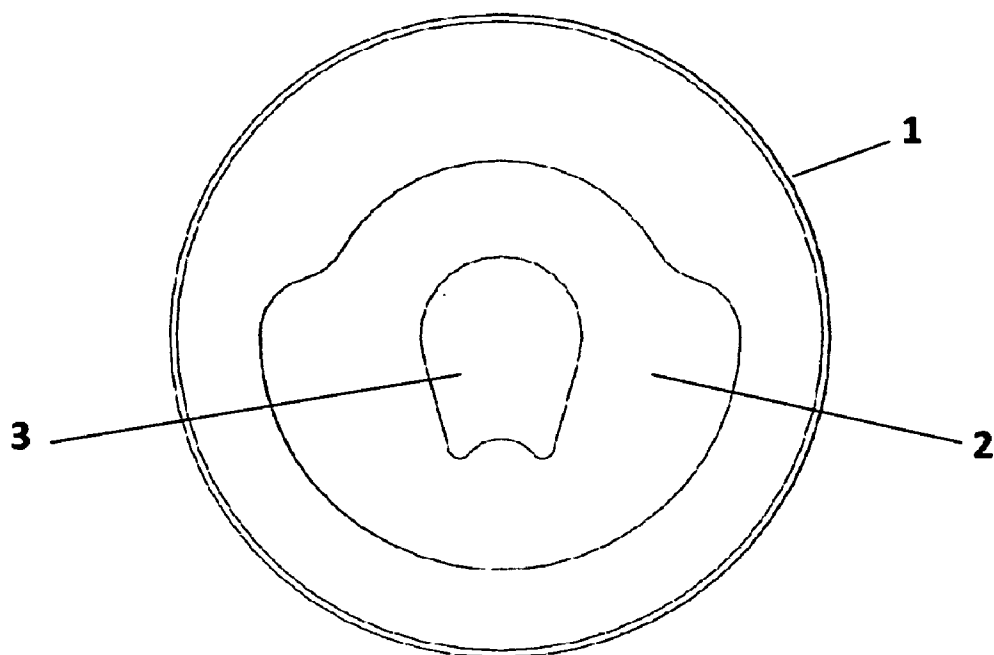


Fig. 1

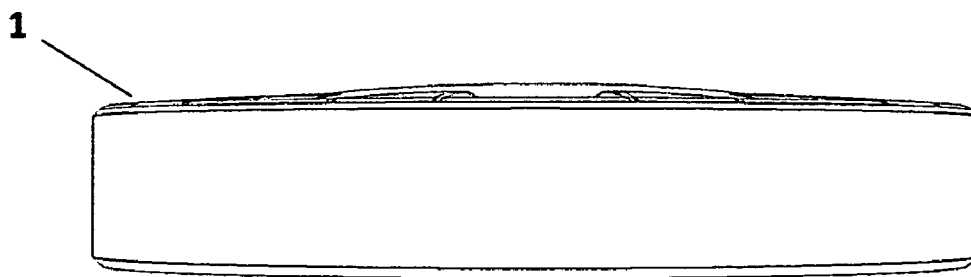


Fig. 2

Fig. 3

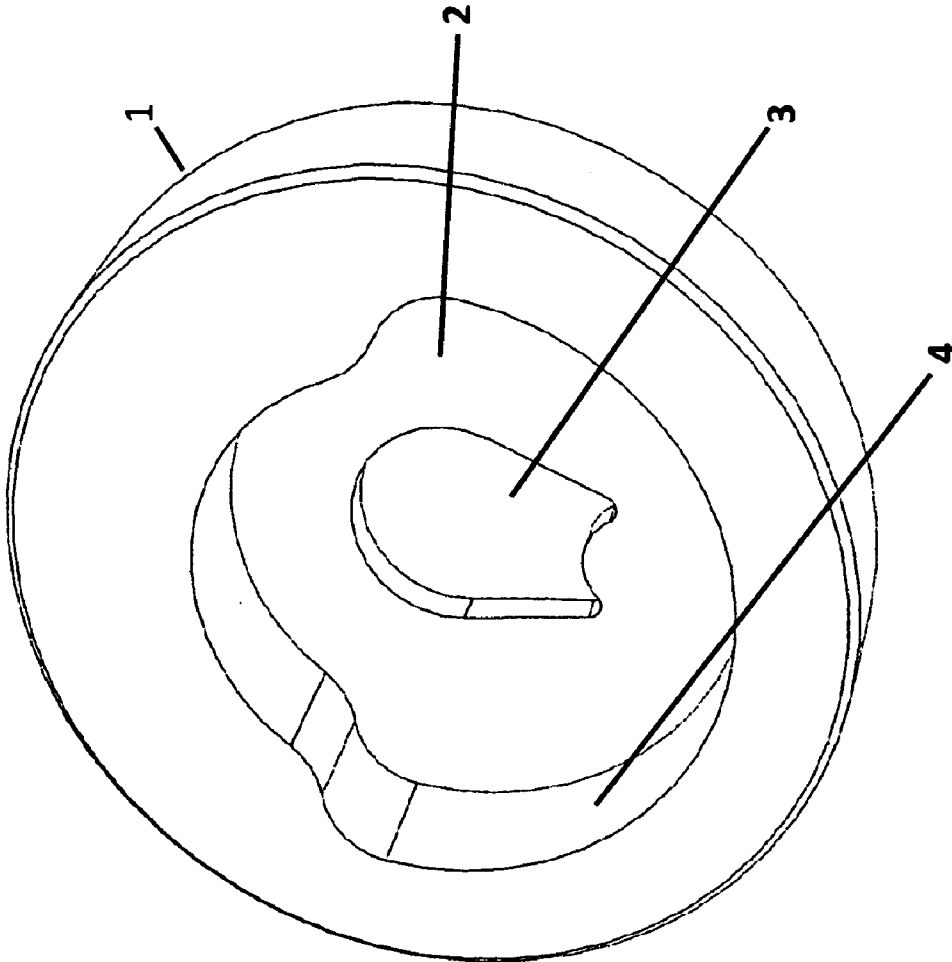


Fig. 4

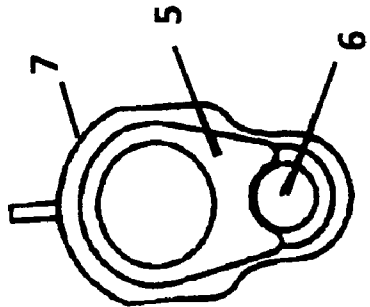
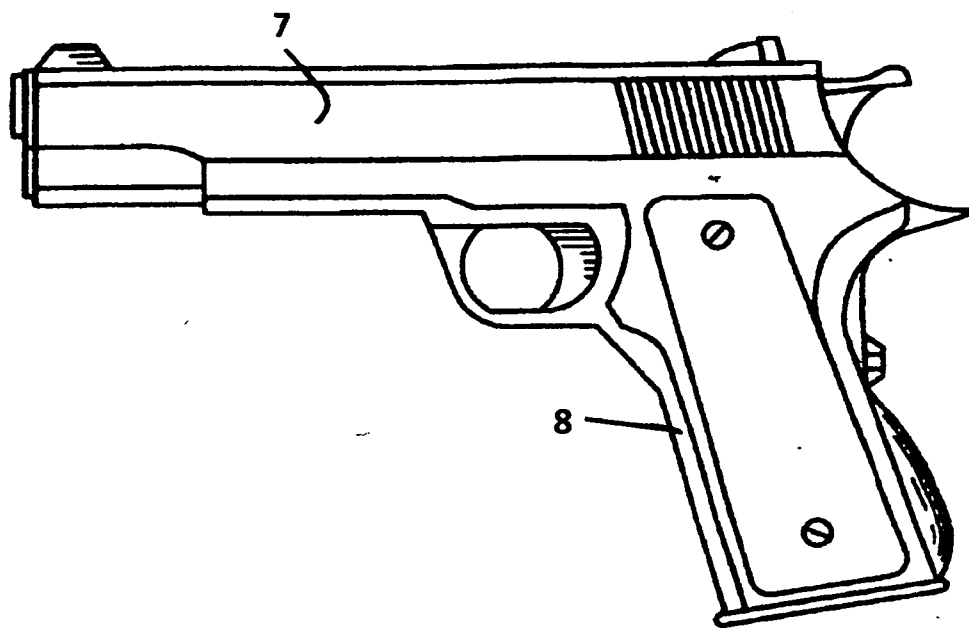


Fig. 5



PALM WRENCH FOR 1911 STYLE PISTOL BARREL BUSHING

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of provisional patent application Ser. No. 61/461,838, filed 2011 Jan. 24 by the present inventor.

BACKGROUND

Prior Art

[0002] The following is a tabulation of some prior art that presently appears relevant:

U.S. Patents			
Pat. No.	Kind Code	Issue Date	Patentee
7,240,450	B2	2007-07-10	Shober
D103579	S	1937-03-16	McNaught
3,519,046	B1	1970-07-07	Pierce
7,703,232	B1	2010-04-27	Johns
4,901,411	B1	1990-02-20	Chestnut et al
D407,958	S	1999-04-13	Royse
7,401,432	B1	2008-07-22	Perry
4,037,275	B1	1977-07-26	Schor
6,430,862	B1	2002-08-13	Berlin
4,483,060	B1	1984-11-20	Farrar et al
4,878,306	B1	1989-11-07	Dyer
5,261,136	B1	1993-11-16	Hall
6,032,398	B1	2000-03-07	Carpenter et al
D564316	S	2008-03-18	Elkaim
D548552	S	2007-08-14	Elkaim
D540631	S	2007-04-17	Bryant
D417372	S	1999-12-07	Cachot

U.S. Patent Application Publications			
Publication Nr.	Kind Code	Issue Date	Applicant
2005/0071925	A1	2005-04-7	Smith
2005/0115399	A1	2005-06-2	Vaid

Foreign Patent Documents				
Foreign Doc. Nr.	Cntry Code	Kind Code	Pub. Dt.	App or Patentee
2011/0035983	US	A1	2011-02-17	Conti

Nonpatent Literature Documents

[0003] Midway USA, Gunsmithing Catalog #34G "Take-down Wrenches" page 297 Brownell's, Catalog #64 2011-2011, pages 138-139

[0004] The semi-automatic pistol known as Colt's Government Model of 1911 is one of the most enduring and ubiquitous designs in modern firearms history. One hundred years after its adoption as the sidearm of the United States Military, collectors and enthusiasts still purchase thousands of new

1911 style pistols each year. Handguns such as the 1911 often require disassembly for cleaning, repair, or inspection. For disassembly, the 1911 style pistol is verified to be unloaded and then the barrel bushing is rotated from its locked position to an unlocked position. In the locked position, the recoil spring plug is held in place by the barrel bushing. And the recoil spring plug in turn holds the recoil spring within the recoil spring cavity. In the unlocked position the spring tension is released and the recoil spring and spring plug may be removed from the cavity. This procedure is reversed and the spring and plug spring must be compressed into the recoil spring cavity.

[0005] In the prior art of U.S. Pat. No. D407,958 to Royce, a generally long, flat bushing wrench is disclosed. The advantage of the current embodiment over the flat wrench designs of the past is one of longitudinal direct pressure. Conventional box end wrenches were developed to apply leverage to nuts and bolts where the major mechanical objective is to apply rotational torque to a fastener. In the case of the 1911 pistol, the barrel bushing is retained by a camlike lobe on the bushing resting within a matching channel in the slide. While a minor amount of rotational force, or torque, is required to disengage the bushing from the channel, the greater force is exerted by the pressure of the recoil spring upon the spring plug. Recoil springs commonly exert from sixteen to eighteen pounds per square inch of pressure with this pistol design. So, the weakness inherent in the long handled design is a failure to easily apply the required force in the proper direction. Certainly, practitioners of the art have been using this antiquated design for over a century. History proves the unobvious design of the present embodiment.

[0006] One example of a prior art bushing wrench is disclosed in U.S. Pat. No. 4,901,411 to Chestnut et al. This bushing wrench includes a wide flange to prevent uncontrolled ejection of the recoil spring and plus as the barrel bushing is unlocked. The tool generally resembles a box end wrench which includes a first end with a recess for partially receiving the recoil spring plug and an opening for receiving the barrel bushing of the pistol. Studs are positioned on the first end to control the amount and/or direction of rotation of the bushing. While this design provided a step forward by providing a flange to help guard against ejection of the plug under force, and a cavity to partially retain the plug, it was still built on a designed to provide torque, rather than direct longitudinal pressure. Chestnut also revealed one or more studs designed to contact a portion of the firearm when the necessary amount of rotation has been achieved. This valuable feature is provided in different manner with the current embodiment. Rotation of the palm wrench is stopped when the inside wall of the cavity contacts a portion of the firearm. The same function is preformed, but there are no pins or studs to break off, since the function is provided by the unique shape of the cavity inside the body of the wrench. Said cavity has been designed to encompass the entire end of the slide, rather than only the bushing.

[0007] U.S. Pat. No. 6,430,862 to Berlin discloses a plug insertion and removal tool for a handgun. The tool includes a handle, a "scoop member" attached to the handle, and a plug depressing member attached to the handle and disposed within the scoop. The scoop member fits around the bottom of the barrel shroud in which the plug is located. To remove the plug the user places the scoop member around the bottom of the barrel shroud and depresses the plug while rotating the handle toward the barrel.

[0008] Another design, U.S. Pat. No. 7,703,232 to Johns, reveals another long, generally flat design modeled where the hand of the user is away from the longitudinal line of the bore, Johns, also includes a flange and reversible handle design completely unlike that of the current embodiment.

[0009] In yet another design, U.S. Pat. No. 7,401,432 Perry discloses a bushing removal and insertion tool. Perry has the advantage over previous flat designs, in that it addresses the need for an application of longitudinal force, rather than rotational torque, to facilitate removal of the bushing. Perry utilizes a cylindrical shape and elongate alignment member which is positioned in the barrel to provide added stability and so that at least one bushing receiving recess of the handle body engages the barrel bushing. The advantages of the current embodiment over this design are three fold. First, Perry reveals an elongate member which is positioned in the barrel. Many practioners of the art would not place any hard object other than a properly sized cleaning rod inside the muzzle of the pistol, due to the possibility of damage to the rifling, which would prove immediately deleterious to accuracy. Second, the elongate member revealed in Perry make the tool somewhat more cumbersome to transport than the current embodiment. And finally, Perry does not reveal a means to limit the rotation of the tool by contacting the slide or a recess to partially capture the recoil spring plug.

[0010] Despite the availability of such prior art, there remains a need for a barrel busing wrench which gives improved control of the process and protects the user from the hazard of an unintended ejection of the spring and plug, which is a commonly understood possibility among those who are skilled in the art.

[0011] In summation, prior art methods fall short when compared to the performance of the present embodiment in several ways. First, bushing wrenches which are generally flat and utilize handles, place the hand of the user fail to provide the benefit of direct pressure from the palm of the hand. When subjected to the pressure of the recoil spring, these designs may tilt or otherwise twist within the grip of the user and allow the spring and plug to be ejected, causing possible injury to the user or loss of the spring and plug. The cylindrical design of Perry relies on an elongate member inserted into the barrel

SUMMARY

[0012] The present embodiment is specifically designed to safely remove the barrel bushing, recoil spring, and recoil spring plug, or spring plug, while providing the operator with much greater control over the energy stored in the recoil spring. And since is easily slipped into a shirt pocket or pistol case, it finds particular application as a tool which is easily storable and transportable for performing maintenance at the shooting range.

[0013] Accordingly, the present embodiment provides a field transportable and specially formed hand operated cleaning tool. Said embodiment provides a uniquely formed recess to prevent the recoil spring plug from being expelled under spring pressure and striking the operator. And also, a new method for bushing removal the advantages of which have remained heretofore un-discovered. By virtue of the present embodiment, a safer and faster method of bushing removal has been achieved.

DESCRIPTION OF THE DRAWINGS BRIEF

[0014] FIG. 1 is a rear facing view of the claimed embodiment, comprised of a generally annular hand tool containing

a generally annular recess for partial capture of the spring and spring plug, which also limits the rotation of the tool, as it comes in contact with part of the slide.

[0015] FIG. 2 is a side section view of the claimed embodiment.

[0016] FIG. 3 is a perspective sectioned view of the claimed embodiment with recoil spring plug trapping recess.

[0017] FIG. 4 is a front facing view of the pistol slide, containing the barrel bushing and recoil spring plug.

[0018] FIG. 5 is a side section view of a typical 1911 style pistol

DRAWINGS—REFERENCE NUMERALS

- [0019] 1) Tool body.
- [0020] 2) Recess in tool body.
- [0021] 3) Bushing opening.
- [0022] 4) Side wall
- [0023] 5) Barrel Bushing
- [0024] 6) Spring Plug
- [0025] 7) Slide
- [0026] 8) Pistol

DETAILED DESCRIPTION OF THE EMBODIMENT

[0027] FIG. 1 shows a rear facing view of the generally annularlar body of the claimed embodiment (1) with recess in tool body. (2) and bushing opening (3). The tool body (1) is preferably comprised of any suitable and durable material, including, but not limited to, metal or plastic. The tool body (1) can be formed through various industrial processes such as investment casting, injection molding, wire electrode discharge machining or laser jet cutting.

[0028] FIG. 2 shows a lateral sectioned view of the claimed embodiment. (1)

[0029] FIG. 3 shows a perspective sectioned view of the claimed embodiment (1), with recoil spring trapping recess (2), and bushing opening. (3)

[0030] FIG. 4 shows a side view of the end of the pistol slide (7), including the barrel bushing (5) and the spring plug (6).

[0031] FIG. 5 is a side view of the 1911 style pistol (8).

Operation:

[0032] After insuring the pistol (8) has been unloaded, the operator grasps the slide (7) firmly encircling the end of the slide with the fingers of one hand. Grasping the tool body (1) firmly in the palm of the opposite hand, the recess in tool body(2), is placed over the end of the slide(7). The bushing opening (3) is now aligned and placed over the bushing (5) and the tool body (1) is pressed against the end of the slide (7) to depress the spring plug (6). Depressing the spring plug (6) while rotating the tool body (1) unlocks the bushing (5) and permits rotation of the bushing (5) by turning the tool body (1) in either direction. The rotation of the tool (1) and bushing (5) are limited by contact between the side wall (4) of the recess in tool body (2). The stored energy in the recoil spring is then

dissipated into the palm of the operators hand as the tool body (1) is slowly withdrawn from contact with the end of the slide (7). To reassemble the pistol (8), the process is reversed. The side wall (4) prevents the spring plug (6) from being ejected during the disassembly process.

Conclusion:

[0033] The present embodiment has clearly advanced the state of the art by introducing the concept of a palm held bushing removal tool that with a specially designed recess for partially capturing the recoil spring plug while encompassing the end of the pistol slide. It provides a simple, solution to a problem that has eluded practitioners of the art for one hundred years. And also introduces a new method of controlled pistol disassembly, which guides the art away from the long handled or bulky tools of the past, toward a new standard of safety and simplicity by controlling the pressure of the recoil spring until said energy has been dissipated.

I claim:

1) A tool comprising a single piece of material for removing and replacing the barrel bushing of the 1911 style pistol, comprising:

- a) A generally annular tool, of generally rigid material, with a bushing opening and generally annular recess for encompassing the end of the pistol slide.
- b) The tool of claim 1 in which the generally annular recess has a generally solid bottom to limit the forward movement of the spring plug.
- c) The tool of claim 1 in which the generally annular recess has side walls to limit the rotation of the tool.
- d) The tool of claim 1 in which said side walls encompass the end of the pistol slide.

Whereby, said generally annular recess in said tool encompasses the end of the slide and acts as a means for dissipation of said spring pressure and limiting of rotational travel, while manipulating the barrel bushing.

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