Nov. 8, 1966 G. L. MITTELSTEADT 3,283,643

DECAPPING AND RESIZING TOOL

Filed June 19, 1964

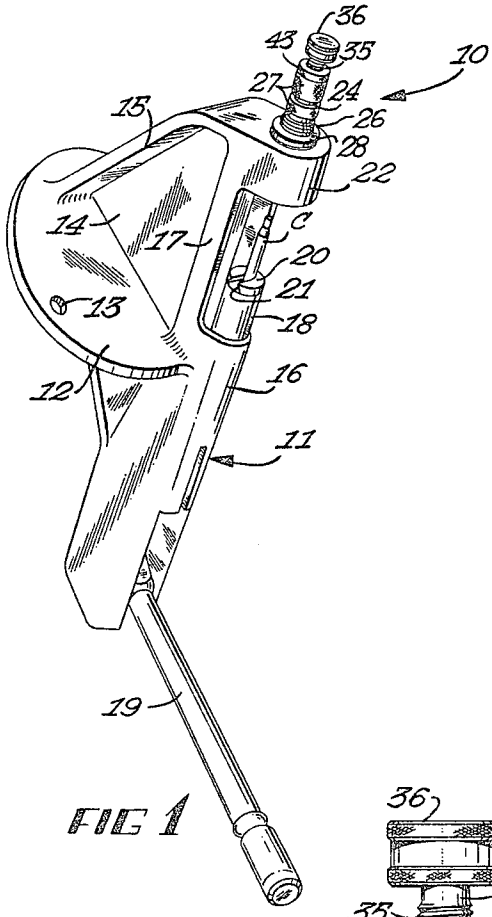


FIG 1

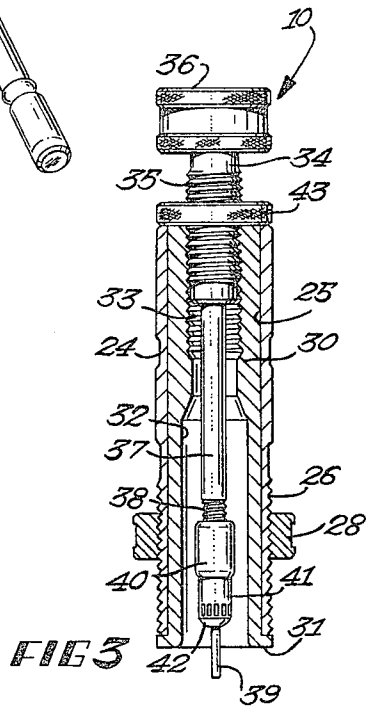


FIG 3

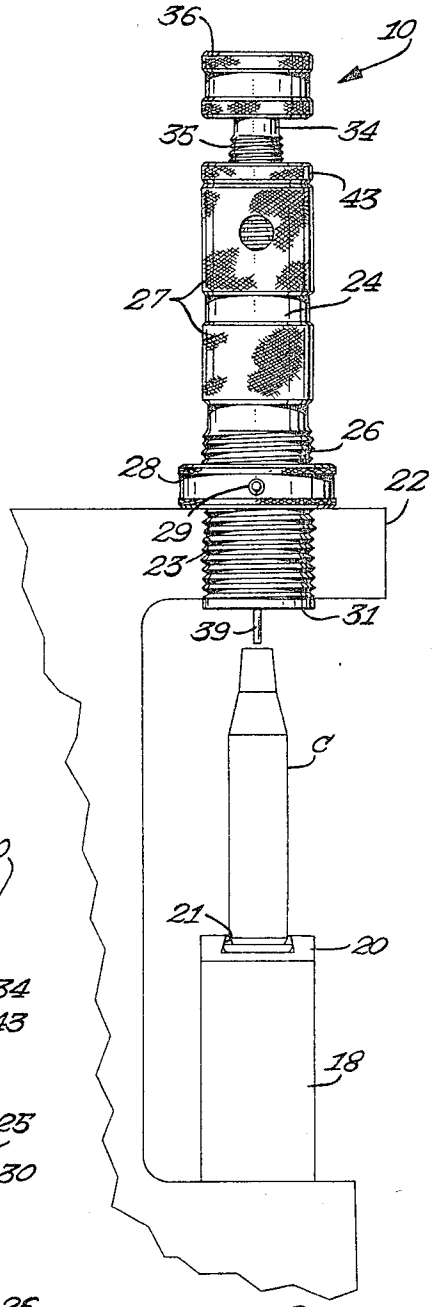


FIG 2

INVENTOR.
GLEN L. MITTELSTEADT
BY
Williamson & Palmatier
ATTORNEYS

United States Patent Office

3,283,643

Patented Nov. 8, 1966

3,283,643

DECAPPING AND RESIZING TOOL

Glen L. Mittelsteadt, Waseca, Minn., assignor to Herter's Inc., Waseca, Minn., a corporation of Minnesota

Filed June 19, 1964, Ser. No. 376,503
4 Claims. (Cl. 86—36)

This invention relates to reloading tools and specifically to a decapping and resizing tool for use in reloading ammunition.

An object of this invention is to provide a novel and improved decapping and resizing tool arranged and constructed for floating alignment with the cartridge case to be reloaded as the latter is inserted into the cavity of the tool during the decapping and resizing operation.

A more specific object of this invention is to provide a novel and improved decapping and resizing tool including a cartridge case receiving member having a decapping and resizing unit mounted therein, and being mounted for slight radial displacement with respect to the die body member whereby the cartridge case receiving member is capable of self alignment with the cartridge case as the latter is inserted into the former during the decapping and resizing operation.

A further object of this invention is to provide a decapping and resizing tool of the class described wherein the decapping and resizing unit is capable of axial adjustment relative to the cartridge case receiving member for accommodating different sized cartridge cases.

These and other objects and advantages of the invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like character references refer to the same or similar parts throughout the several views, and in which:

FIG. 1 is a perspective view showing a reloading tool press incorporating my novel reloading tool;

FIG. 2 is a side elevational view of my novel decapping and resizing tool; and

FIG. 3 is a vertical sectional view of my novel decapping and resizing tool.

Referring now to the drawings, and more specifically to FIG. 1 it will be seen that one embodiment of my novel decapping and resizing tool, designated in its entirety by the reference numeral **10**, is illustrated mounted on a reloading tool press **11**, constructed of a suitable rigid metallic material and including a horizontal mounting or flange plate **12**. This horizontal mounting plate **12** is suitably apertured at **13** to permit mounting of the tool press upon a work bench or other type of support structure. A vertically disposed flange **14** is integrally formed with the mounting plate **12** and has integrally formed therewith an inclined reinforcing rib **15**.

Integrally formed with the mounting plate **12** is a vertically disposed plunger guide member **16** which extends downwardly beyond the mounting plate **12** and which is provided with a cylindrical bore therein for accommodating the plunger or ram of the tool press. An arcuate channel member is integrally formed with the plunger guide member **16** and the upstanding flange **14** and forms a continuation of the plunger guide member **16** for guiding the tool press plunger. Thus the bore of the plunger guide member **16** and the arcuate guide channel of the arcuate channel member **17** define a continuous vertically disposed guide surface for guiding the tool press plunger during movement of the latter,

The tool press plunger **18**, as pointed out above, is vertically slidable in the continuous vertically disposed guideway and is provided with a suitable linkage (not shown) which is operated by an actuating handle **19**. The linkage for reciprocating the plunger or ram **18** is preferably of the type disclosed in my U.S. Patent No. 3,087,372. It will be noted that the upper terminal portion

of the plunger **18** is provided with a shell holder **20** having a slot **21** therein for accommodating the lower end of a spent cartridge shell therein. It is also pointed out that the shell holder **20** is detachably connected to the plunger **18** and may be removed and replaced with a shell holder for accommodating a different kind or size of shell to be loaded.

The tool press **11** is also provided with a conventional die holder **22** which is integrally formed with the upper terminal portion of the channel member **17** and with the reinforcing rib **15**. This die holder **22** is provided with a threaded recess **23** therein which is disposed in coaxial relation with respect to the longitudinal axis of the plunger **18** and receives the decapping and resizing tool **10** therein.

The decapping and resizing tool **10** includes a generally cylindrically shaped elongate die body member **24** formed of a suitable hardened steel and having a uniformly sized cylindrical bore **25** therethrough. It will be noted that the exterior lower end portion of the die body member **24** is threaded as at **26** for threaded engagement with the threaded recess **23** of the die holder **22**. The upper exterior portions of the die body member **24** are knurled as at **27** to facilitate mounting thereof in the die holder recess **23**.

The linear dimension of the threaded lower end **26** of the die body member **24** is greater than the axial dimension of the threaded recess **23** thereby permitting adjustment of the die body member relative to the die holder **22**. Therefore means are provided on the die body member for locking the same in an adjusted position relative to the die holder **22**. This means includes an internally threaded, externally knurled locking ring or element **28** which, as best seen in FIG. 2, may be tightened against the upper surface of the die holder **22**. This locking ring is also provided with a small threaded recess for threadedly accommodating a set screw **29** for locking the locking ring against displacement relative to the threaded portion **26** of the die body member.

An elongate hollow cartridge case receiving member **30** is positioned within the die body member **24** and has a uniformly cylindrically shaped external surface having a diameter approximating but slightly smaller than the internal diameter of the die body member **24**. Thus the cartridge case receiving member **30** is capable of slight radial displacement relative to the die body member **24**. It will be noted that the receiving member **30** while approximating the length of the die body member **24** has a slightly greater linear dimension than the latter and is provided with an outturned annular flange or stop element **31** at its lower end which engages the corresponding lower end of the die body member and limits upward movement of the receiving member.

It will be seen that the receiving member **30** also has a bore therethrough in which the major portion thereof is shaped to define a cartridge receiving recess or cavity **32** for very snugly seating a cartridge case C therein. The upper portion of the bore of the cartridge case receiving member **30** is threaded as at **33**, as best seen in FIG. 3, and this internal threaded portion of the receiving member **30** is of uniform diameter.

An elongate decapping and resizing unit **34** is connected to and projects through the cartridge case receiving member **30**. This decapping and resizing unit **34** includes an upper portion which is externally threaded as at **35** for threaded engagement with the threaded portion **33** of the receiving member **30** and which terminates upwardly in an enlarged knurled turning head **36**.

Although not shown in the drawing, the lower terminal end of the threaded portion **35** of the unit **34** has a downwardly or axially facing threaded recess therein for threadedly engaging the upper end of an elongate stem or rod **37** which has a threaded lower end **38**. The

threaded lower end 38 of rod 37 is also provided with a split or slotted socket which receives the upper end of an elongate decapping pin 39 which is also constructed of suitable hardened tempered steel. The lower end of rod 37 has an elongate hollow expander member 40 detachably mounted thereon. This expander member is provided with a bore therethrough, the upper end of which is threaded and threadedly engages the lower threaded end 38 of the rod 37 and serves to lock the decapping pin 39 to the lower end of the rod 37. It will be noted that the lower end portion of the expander member is of reduced cross sectional configuration and terminates downwardly in a substantially conical surface 42 to facilitate entry thereof into the neck of the cartridge case to be resized.

Since the decapping and resizing unit 34 may be axially adjusted relative to the receiving member 30, means are provided for locking the unit 34 in an axially adjusted position. To this end, an externally knurled internally threaded locking ring member 43 threadedly engages the threaded portion 35 of the unit 34 and is tightened into engaging relation with respect to the upper end of the die body member 24. When the locking ring member 43 is tightened against the upper end of the die body member 24, the stop element or flange 31 of the receiving member 30 is urged into clamped relation against the lower end of the die body member 24. Thus the decapping and resizing unit 34 as well as the cartridge case receiving member 30 are clamped against axial movement relative to the die body member 24 by the cooperative action of the locking ring 43 and the flange 31.

During operation of the decapping and resizing tool 10, the tool will be first properly positioned upon the die holder 22 of the tool press 11. Normally, the lower end of the decapping and resizing tool 10 will be disposed closely adjacent the lower surface of the die holder 22, as best seen in FIG. 2. A spent cartridge case C will be mounted in the shell or cartridge holder 20 of the tool press plunger 18 while the latter is in the lower or retracted position. Thereafter an operator will actuate the plunger 18 by the actuating handle 19 to cause upward or extensible movement of the plunger and the cartridge case will be inserted into the recess or cavity 32 of the receiving member 30.

In some instances, the plunger may become axially disaligned with respect to the die holder recess or the decapping and resizing tool 10. When this condition occurs, the cartridge case C cannot be precisely seated in the cavity or recess of a conventional decapping and resizing tool. In conventional tools, the die body member thereof is constructed to define the cartridge case receiving recess and since the die body is rigid with the die holder, no radial adjustment of the tool can be produced. Therefore if the cartridge is mounted on a plunger which is disposed in disaligned relation with respect to the tool, seating of the cartridge case in the tool recess is sometimes difficult or in some instances cannot be accomplished.

However, since the receiving member 30 is capable of slight radial displacement, with respect to the die body member 24, this receiving member is capable of a limited self aligning floating action with respect to the plunger mounted cartridge case so that very easy insertion of the cartridge case into the recess or cavity 32 may be readily accomplished. The cartridge case C will be urged into the recess and the expander member 40 as well as the decapping pin 39 will be inserted through the upwardly opening neck of the cartridge case. Additional upward movement of the plunger 18 causes the larger upper portion of the expander member 40 to resize or expand the neck of the cartridge case while the pin 39 engages and removes the spent primer cap of the cartridge. Thereafter, the actuating handle 19 is oppositely swung to retract the plunger 18 and the resized and decapped cartridge C is removed from the cartridge or shell holder 20 and the next cartridge to be resized and decapped will be mounted upon the cartridge holder 20 and the operation repeated.

Thus it will be seen from the foregoing description that I have provided a novel and improved decapping and resizing tool including a receiving member mounted within but capable of radial floating movement relative to the die body member so that the cartridge receiving recess of the tool is capable of a self aligning floating action with respect to a plunger mounted cartridge case to be resized and decapped.

It will also be noted from the foregoing description that my novel decapping and resizing tool is arranged and constructed so that the cartridge case receiving member and the decapping and resizing unit 34 are also capable of relative adjustment with respect to the die body member but are also held against axial displacement from a pre-adjusted position relative to the die body member.

Thus it will be seen that I have provided a novel decapping and resizing tool which is not only of simple and inexpensive construction but which functions in a more efficient manner than any heretofore known comparable device.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What is claimed is:

1. A tool for resizing and decapping spent ammunition comprising

an elongate normally vertically oriented body member having a substantially cylindrical bore extending axially therethrough and having means thereon to permit mounting thereof on a manually operable reloading tool press,

an elongate hollow cartridge case receiving member having a substantially cylindrically shaped exterior surface and being positioned within the bore of said body member, and being capable of slight radial displacement relative to the axis of said body member, the interior of said receiving member having one end portion thereof shaped and contoured to receive a cartridge case in snug fitting relation therein,

means on the lower end of said case receiving member and engaging the adjacent end of said body member,

an elongate decapping and expanding unit projecting through said receiving member and having means thereon adjacent one end thereof releasably engaging cooperating attachment means on the adjacent upper end of said case receiving member,

and adjustable locking means on said unit engaging said body member and cooperating with said means on the lower end of said receiving member for clamping said unit and receiving member within said body member.

2. A tool for resizing and decapping spent ammunition comprising

an elongate normally vertically oriented body member having a substantially cylindrically shaped bore extending axially therethrough and having means thereon to permit mounting of said body member on a manually operable reloading tool press,

an elongate hollow cartridge case receiving member having a substantially cylindrically shaped exterior surface and being positioned within the bore of said body member, and being capable of slightly radial displacement relative to the axis of said body member, the interior of said receiving member being shaped and contoured to receive a cartridge case in snug fitting relation therein,

an outturned flange on the lower end of said receiving member engaging the adjacent end of said mounting member,

an elongate decapping and expanding unit projecting

through said receiving member and having means thereon releasably engaging cooperating means on the upper end portion of said receiving member,

and an adjustable lock ring on said unit being axially adjustable relative thereto and engaging said body member and cooperating with said flange on said receiving member for clamping said unit and receiving member within said body member.

3. The tool as defined in claim 2 wherein said receiving member has a linear dimension slightly greater than the linear dimension of said body member.

4. A tool for resizing and decapping spent ammunition comprising

an elongate body member having a substantially cylindrical bore extending axially therethrough and having means thereon to permit mounting thereof on a manually operable reloading tool press,

an elongate hollow cartridge case receiving member having a substantially cylindrically shaped smooth exterior surface and being positioned within the bore of said body member, said case receiving member having a longitudinal dimension at least as great as the longitudinal dimension of said body member, the interior of said case receiving member having one end portion thereof shaped and contoured to receive a cartridge case in snug fitting relation therein,

an elongate decapping and expanding unit projecting through said case receiving member and having means thereon releasably engaging cooperating attachment means on said case receiving member, said decapping and expanding unit including an expanding member adapted to be urged into the neck of a cartridge case to be resized,

a decapping pin projecting axially downwardly from said expanding member,

and an adjustable locking means including cooperating locking elements carried by said case receiving member engaging said body member for releasably locking said case receiving member within said body member.

References Cited by the Examiner

UNITED STATES PATENTS

1,864,880	6/1932	Zimmerman	86—23
2,700,915	2/1955	Pattison	86—43 X
2,741,148	4/1956	Thompson	86—43 X
3,175,456	3/1965	Goodsell	86—23

BENJAMIN A. BORCHELT, *Primary Examiner.*

R. V. LOTTMANN, P. A. SHANLEY,
Assistant Examiners.