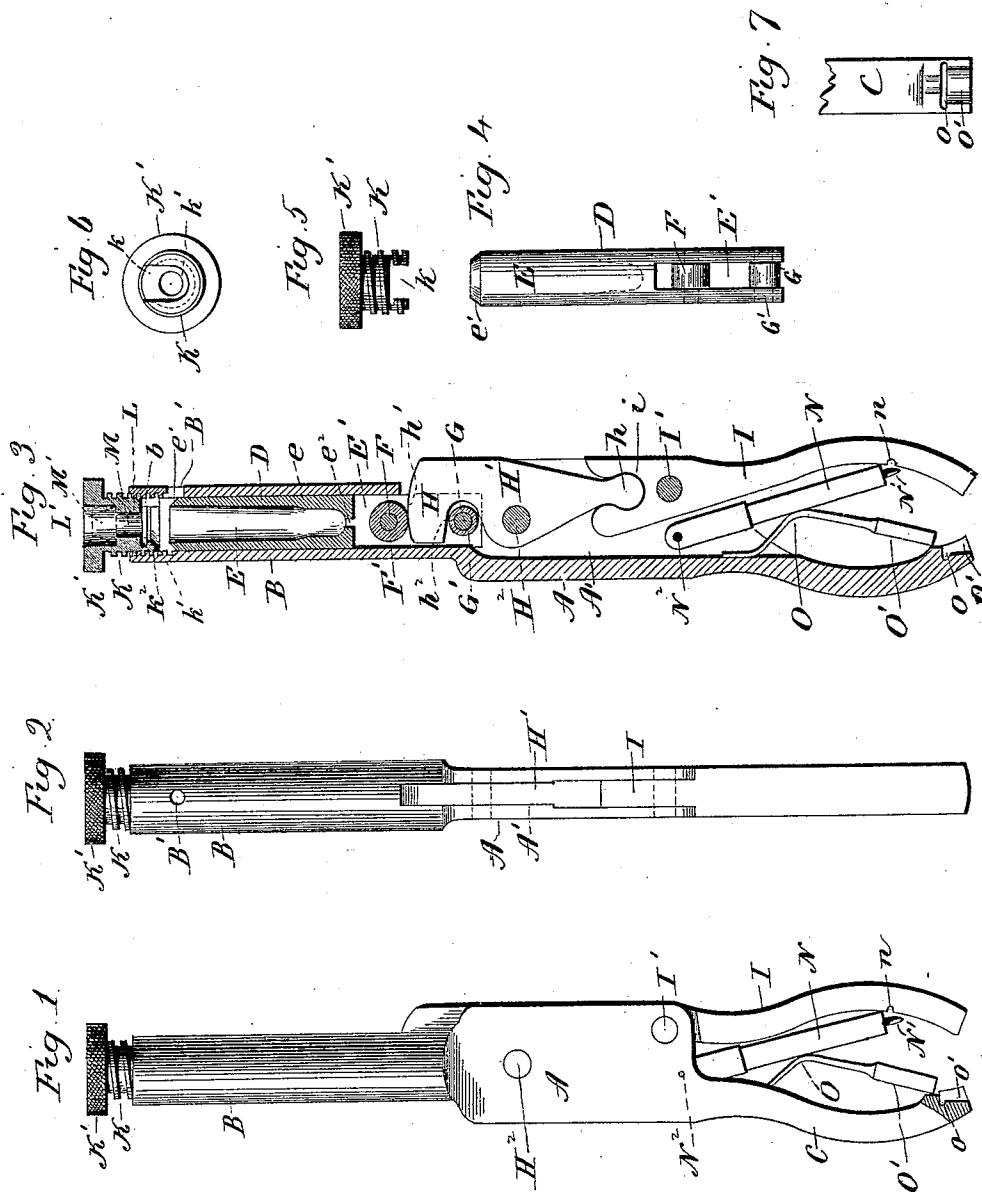


(No Model.)

W. G. SMITH.
CARTRIDGE RELOADING TOOL.

No. 514,737.

Patented Feb. 13, 1894.



Witnesses
J. H. Shumway
William D. Kelsey.

William G. Smith
Inventor.
By atty. Earle Seymour

UNITED STATES PATENT OFFICE.

WILLIAM G. SMITH, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
WINCHESTER REPEATING ARMS COMPANY, OF SAME PLACE.

CARTRIDGE-RELOADING TOOL.

SPECIFICATION forming part of Letters Patent No. 514,737, dated February 13, 1894.

Application filed May 15, 1893. Serial No. 474,261. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. SMITH, of New Haven, in the county of New Haven and State of Connecticut, have invented a new

Improvement in Cartridge-Reloading Tools; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of a reloading-tool constructed in accordance with my invention; Fig. 2, an edge view thereof; Fig. 3, a view of the tool in central longitudinal section; Fig. 4, a detached plan view of the die; Fig. 5, a detached view of the cartridge-holder in side elevation; Fig. 6, a reverse plan view of the cartridge-holder; Fig. 7, a broken view in inside elevation of the outer end of the handle of the frame of the tool.

My invention relates to an improvement in tools for reloading metallic cartridge-shells, the object being to provide a simple, convenient and effective device, adapted to do the work required of it progressively, or little by little, whereby I am enabled to employ a leverage giving great power.

With these ends in view, my invention consists in the combination, in a reloading-tool, with a frame, of a die located therein, and adapted to receive a cartridge-shell and a bullet, levers for reciprocating the die, and a cartridge-holder mounted in the said frame in line with the die, and so as to be gradually moved toward the same to secure a progressive action of the die upon the cartridge-shell.

My invention further consists in certain details of construction and combinations of parts as will be hereinafter described, and pointed out in the claims.

As herein shown, the frame of my improved device comprises a body A, having flat parallel sides, and constructed with a longitudinal slot A', a tubular die-holder B, extending from one end of the said body in line therewith, and opening at its inner end into the slot thereof, and a handle C, extending from one edge of the opposite end of the said body, and rigid therewith. Preferably, and as here-

in shown, the body, die-holder and handle comprising the frame of the tool, will be made integral with each other, although that is not essential.

A cylindrical die D, located in the die-holder, and adapted in its external diameter to fit closely within the same, is constructed with a central, longitudinal tapering chamber E, adapted to receive a cartridge-shell, and a bullet, and conforming in size and taper to the external conformation of the cartridge formed by assembling the shell and bullet together. The inner end of the said chamber is reduced in diameter to receive the bullet, whereby a beveled annular shoulder e, is formed within the chamber. The said shoulder operates to crimp the open end of the shell upon the bullet, as will be set forth later on. The outer end of the die has an exterior bevel e', which adapts it to reduce the shell clear to its flange, as will also be explained later on. The inner end of the die is constructed with a central longitudinal slot E', in which anti-friction rolls F and G are located, the said rolls being mounted upon pins F' and G', extending into the opposite walls of the slot E'. A vent-opening e² leading from the inner end of the chamber E into the slot E', provides for the escape of any foreign matter that may get into the chamber, and also for the escape of the air confined in the chamber when the bullet is introduced thereinto, for otherwise, the air in the chamber would form a cushion and prevent the bullets from being pushed home in it. The said rolls are sufficiently separated from each other to receive between them the operating-finger H, of an operating-lever H', which is located in the slot A', of the body B, of the frame, being hung on a heavy pin H², extending transversely across the said slot, and supported at its ends in the opposite walls of the body A. The outer end of this lever is shaped to form the ball member h, of a ball and socket joint, the socket member i whereof is formed in the inner end of a handle-lever I, extending at its inner end into the slot A', of the body A, and hung upon a pin I', mounted in the said body, the outer end of the said lever being bowed in opposition to the curvature of the handle C, with which it co-oper-

ates, as it were, in forming the other handle of the tool. The forward edge of the finger H, is slightly convex, as at h' , to co-act with the anti-friction roll F, in imparting a very slight outward movement to the die, when the said roll is pressed against the said edge of the finger, and the lever H', is operated by the handle I. On the other hand, the inner edge of the said finger is inclined, as at h^2 , so as to co-act with the anti-friction roll G, in drawing the die slightly inward, when the said roll is drawn inward against the said face h^2 , and the lever H' is operated by the handle I. I may here remark that the said levers are constructed and arranged so that the movement of the die when compared with the movement of the handle-lever I, will be as one is to two hundred, whereby I secure in a hand instrument very great power, though at the expense of time and labor, for the movement of the die is so slight that it must be repeated many times in doing the work required of it. I do not, of course, limit myself to constructing the levers so that the movement of the die and handle-lever will be as one is to two hundred, though that is approximately the result secured by the construction illustrated. My invention will be satisfied by any construction in which the movement of a handle-lever is utilized in securing a short, but very powerful movement of the die. Nor do I limit myself to the construction and arrangement of the operating-lever H', and the handle I, as the construction of those levers might be changed.

The outer end of the tubular die-holder B of the instrument is constructed with internal screw-threads b , adapting it to receive the cartridge-holder, which consists of an externally screw-threaded shank K, and a knurled head K', of larger diameter than the same, located at the outer end thereof. An open transverse slot k , formed in the inner end of the shank K, of the cartridge-holder, is adapted to receive the flanged end of a cartridge-shell, which is applied to and removed from the said slot through the open end thereof. It will be understood that after the cartridge-shell has been applied to the cartridge-holder, the latter may be rotated, so to speak, upon its head, the outer face of which engages with an abutment k' formed within the said shank, and located at a right angle to the axis thereof. The extreme end of the shank is provided with an internal bevel k^2 , corresponding to the external bevel e' of the die, and receiving the same just as the operation of reloading a cartridge-shell is being completed. The said bevels provide the clearance required for the introduction of the entire cartridge-shell, with the exception of its flange, into the die which is thus enabled to act upon the shell so as to reduce it in diameter throughout its length, for the shells are generally expanded a little in firing, and must be reduced to gage again when reloaded.

A sight-hole B' formed in the tubular die-

holder B, near the outer end thereof, is provided to enable the person using the device to tell when the operation is complete, indicating to him when to begin to reverse the movement of the device for the removal of the loaded cartridge. A central longitudinal opening L, formed in the shank K, of the cartridge-holder, opens at its outer end into an opening L', of larger diameter, formed in the head K', and extending slightly into its shank. The opening L, receives the shank M, of a conical expander M', which is employed to expand the outer ends of the cartridge-shells, to adapt them to have the bullets entered into them preparatory to placing a cartridge-shell and bullet in the die. In case an explosion should occur in the process of reloading a cartridge-shell, relief will be afforded through the openings L L' in the holder.

Preferably I employ with my improved device an uncapping-tool N, consisting in its main portion of a cylindrical shank adapted in diameter to have a cartridge-shell slipped over it, and provided at its outer end with a pin N', which enters the cap from the inside thereof, and forces the same from the shell, which is for that purpose shoved inward over the uncapping-tool by means of the handle-lever I, the inner face of which is thereto constructed with a transverse slot n , into which the flange of the head of the shell is inserted. The inner end of this tool is entered into the slot A' of the body A, and hung on a pin N². For furnishing the cartridges with new caps, I provide the tool with a capper, consisting of an inwardly bent spring O, having its inner end rigidly attached to the body A, and its outer end furnished with a long cylindrical head O', approximately corresponding in diameter to the diameter of a cap. The spring O is bent inward and engaged by the uncapping-tool N, which in turn is engaged by the handle lever I, the power of which is thus brought to bear upon the capper through the medium of the uncapping-tool. For the purpose of holding a cartridge and cap in right presentation to the capper, the handle C, of the tool is constructed near its outer end with a transverse semi-circular groove o , adapted to receive the flange of a shell, and with a concavity o' shaped to receive the adjacent portion of the shell. The cartridge-shell being engaged with the groove o , and cavity o' , with the head O' of the capper in line with the cap in the shell, the handle-lever is pressed inward, whereby the spring O, is sufficiently straightened to drive the head O' onto the cap, and force the same into the shell. I do not, however, limit myself to the use of these devices, but prefer to use them on account of the convenience they afford.

Having now described my invention, I will proceed to set forth the method of its operation. The shell to be reloaded is first forced against the expander M', whereby its open end is sufficiently expanded to permit the bullet to be entered into it. Of course, this

operation may be dispensed with, if the bullet can be entered into the shell without expanding the same. The powder previously placed in the shell, will, however, prevent the bullet from being pushed home therein, for it is designed that the bullet shall compress and pack the powder during the reloading operation. The shell having the bullet thus entered into it, is then slipped into the cartridge-holder, which is at this time detached from the tool. Then after the shell has thus been combined with the holder, the same is returned to the tool, at which time the bullet and shell are entered into the die. The cartridge-holder is now turned inward until it can be turned no longer, whereby the bullet and shell are forced into the die, the bullet being bottomed in the chamber thereof, and the open end of the shell driven into close engagement with the walls of the said chamber. The described inward movement of the cartridge-holder, cartridge-shell and bullet, will cause the die to be pushed inward so as to force its anti-friction roll F, against the convex outer edge h' of the finger H, of the operating-lever H'. The handle-lever being now operated, the die is moved outward with great force, though but for a very short distance. The shell being at this time held against outward movement by the abutment h' of the cartridge-holder, will have the die forced over it for a distance represented by outward movement thereof. The handle-lever I, will now be swung outward, whereby the said convex edge h' of the lever H' will be so changed in its relation to the anti-friction roll F, that the die is left free for a corresponding inward movement. The clearance thus secured is now taken up by rotating the cartridge-holder by its knurled head, whereby the shell will be moved correspondingly inward over the bullet. The handle-lever I, is now operated a second time to again force the die outward, whereby the die will be forced a little farther over the shell. The clearance thus secured is again taken up by turning the cartridge-holder to move the shell inward over the bullet, and so on, the die being gradually pushed over the shell by the operation of the lever I, and the shell being gradually pushed over the bullet by means of the manual operation of the cartridge-holder. It will be understood that every time the shell is pushed over the die, the powder in the shell is subjected to compression and the shell reduced in diameter, if it has been expanded in firing, which will generally be its condition. Finally, when the shell has been pushed nearly home, the beveled shoulder of the chamber acts upon the shell, so as to crimp or reduce the same upon the bullet. It will require many movements of the die to reload the shell as above stated, but the operation is one requiring the expenditure of great power, which is not to be secured in a hand machine except by a leverage which will move the die only a little at a time. A

rapidly moving die would demand for its operation a greater power than can be brought to bear upon a hand tool. The power secured by my improved tool is so great that in case the bullet does not quite conform to the shape of the inner end of the chamber in the die, it will be re-formed during the operation of reloading the shell. When the operation of reloading the shell has been completed, as will be observed through the sight-hole B' of the instrument, the operation of extracting the cartridge from the die will be begun. This consists in backing the cartridge-holder out of the tubular die-holder little by little, and operating the handle-lever between each reverse movement of the cartridge-holder. When the cartridge-holder is turned backward so as to move it out of the die-holder, it will pull the cartridge outward, and the cartridge being at this time frictionally coupled with the die, the same will be pulled outward also, whereby the anti-friction roll G, will be drawn against the inclined face h^2 of the finger H, of the operating-lever H'. Now when the handle-lever I is operated, the said incline will co-operate with the said anti-friction-roll to positively draw the die inward for a short distance away from the cartridge. The clearance thus secured is immediately taken up by turning the cartridge-holder backward again, until the said roll has again been drawn against the said incline of the operating lever. The handle lever is now again operated, whereby the die will be positively drawn inward away from the cartridge for a short distance. The cartridge-holder is again turned backward to take up the clearance thus secured. These operations are continued until the cartridge has been sufficiently disengaged from the die to enable it to be withdrawn therefrom. It will thus be seen that the die is positively forced outward or positively drawn inward according to the way in which its anti-friction rolls are brought to bear upon the finger of the operating-lever.

It is apparent that in carrying out my invention some changes in the construction herein shown and described may be made, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a reloading-tool, the combination with a frame, of a die located therein, and adapted to receive a cartridge-shell and a bullet, levers for reciprocating the die, and a cartridge-holder mounted in the said frame in line with the die, and so as to be gradually moved toward the same to secure a progressive action of the die upon the cartridge-shell, substantially as described.

2. In a reloading-tool, the combination with

the frame thereof, of a die located therein, and adapted to receive a cartridge-shell, and a bullet, levers for reciprocating the die, and a cartridge-holder provided with screw-threads adapted to take into corresponding threads formed in the frame in which it is located in line with the die, substantially as described.

3. In a reloading-tool the combination with the frame thereof, of a die having a tapering socket or chamber adapted to receive a bullet and a cartridge-shell, levers mounted in the frame for positively reciprocating the die, and a cartridge-holder mounted in the frame for progressive movement toward the die, and constructed with a transverse slot to receive the flanged end of a cartridge-shell on which the said cartridge-holder is rotatable, substantially as described.

4. In a reloading-tool the combination with the frame thereof, of a die having a tapering chamber, levers for imparting a short reciprocating movement to the die, a cartridge-holder mounted in the frame for gradually moving a cartridge-shell toward the die, and constructed with a longitudinal opening for the relief of the instrument should a cartridge explode in the process of reloading, substantially as described.

5. In a reloading-tool, the combination with the frame thereof, of a die adapted to receive a cartridge-shell and a bullet, levers mounted in the frame for reciprocating the die, and a cartridge-holder comprising an externally threaded shank and a knurled head, the shank having an open transverse slot formed in it to receive the flanged end of a cartridge-shell, and the said holder having a longitudinal opening extending through it, substantially as described.

6. In a reloading-tool, the combination with the frame thereof, of a die adapted to receive a cartridge-shell and a bullet, levers for reciprocating the die, and a cartridge-holder mounted in the frame in line with the die, and adapted to be moved progressively toward the same, the said frame being constructed with a sight-opening arranged to show when the die and holder meet, substantially as described.

7. In a reloading-tool, the combination with the frame thereof, of a die adapted to receive a cartridge-shell, and a bullet, levers mounted in the frame for reciprocating the die, a cartridge-holder mounted in the frame to be progressively moved toward the die, and an expander located in a longitudinal opening formed in the said cartridge-holder, substantially as described.

8. In a reloading-tool, the combination with the frame thereof, of a die adapted to receive a cartridge-shell and a bullet, and provided

with two pins separated from each other, an operating-lever mounted in the frame, and having an operating-finger arranged to extend between the said pins, and having its respective edges inclined to impart opposite movement to the die, a handle-lever for actuating the said operating-lever, and a cartridge-holder mounted in the frame so as to impart gradual inward movement to a cartridge-shell toward the die, substantially as described.

9. In a reloading-tool, the combination with a frame comprising a body, a tubular die-holder and a handle respectively projecting from the opposite ends of the said body; of a die located in the tubular die-holder of the body, and constructed with a tapering-chamber adapted to receive a cartridge-shell and a bullet, an operating and a handle-lever mounted in the said body of the frame, which is thereto slotted, the said operating-lever being connected with the die so as to positively reciprocate the same forward and back, and a cartridge-holder located in the outer end of the tubular die-holder, and constructed to be gradually moved toward and away from the die, substantially as described.

10. In a reloading-tool, the combination with the frame thereof comprising a slotted body, a tubular die-holder and a rigid handle, of a die located in the tubular die-holder, a cartridge-holder mounted in the end of the said tubular die-holder so as to be gradually moved toward and away from the die, and an operating and a handle-lever mounted in the slotted body of the frame for reciprocating the die, and an uncapping-tool and a capper combined with the handle and handle-lever for operation thereby, substantially as described.

11. In a reloading tool, the combination with the frame thereof, of a die adapted to receive a cartridge-shell and a bullet, and having its outer end beveled, levers for imparting a short reciprocating movement to the die, a cartridge-holder having a transverse slot formed in it to receive the flanged end of a cartridge-shell, and having a bevel corresponding to that of the die, but opposite in inclination, and the said holder being movable toward and from the die, substantially as described, and whereby by beveling the die and holder the die may be pushed over the shell to the flange thereof.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WM. G. SMITH.

Witnesses:

DANIEL H. VEADER,
A. W. EARLE.