This invention relates to reloading tools for ammunition, particularly pistol and rifle cartridge cases and bullets.

As is well known, a reloading tool comprises a frame, for holding sizing and forming dies, with reciprocable plunger provided for forcing cartridge cases into the appropriate die or swaging bullets. Reloading tools also generally include an extractor for removing expended primers and for inserting new primers.

The principal object of this invention is to provide a cartridge reloading tool having improved constructional characteristics insuring maximum accuracy and ease of resizing cartridge cases and swaging bullets.

Another object of this invention is to provide a cartridge reloading tool having an improved primer insertion and extractor means.

It is also an object of this invention to provide a highly versatile cartridge reloading tool which can be readily converted for right and left handed operators.

The above and other objects and advantages of this invention will be more readily apparent from the following description and with reference to the accompanying drawing in which:

FIG. 1 is an elevational view of a cartridge reloading tool embodying this invention;
FIG. 2 is a partial side elevational view of the reloading tool shown in FIG. 1;
FIG. 3 is a section taken along line 3-3 of FIG. 1; and
FIG. 4 is a section taken along line 4-4 of FIG. 1.

Referring in detail to the drawing, the reloading tool embodying this invention comprises a frame indicated generally at 6. The frame is approximately in the form of a figure eight and is preferably a steel drop forging. A bore 7 is provided in the frame for supporting a die, for resizing cartridges or swaging bullets, as indicated generally at 8. As shown, a primer ejector pin 9 extends downwardly from within the die guide.

The frame 6 has laterally spaced, parallel uprights 10 and a cross web 11 intermediate upper and lower cross members 13 of the frame. The web 11 includes a bore 12 in axial alignment with the bore 7 of the upper cross member 13 and with bore 14 of the lower cross member 13. The bores 12 and 14 serve as bearing surfaces to guide the movement of plunger 15, shown in its lower or retracted position in FIG. 1 and in its upper position in FIG. 2. The web 11 is vertically disposed to guide substantially the entire actual working portion of the plunger stroke, that is, the portion of the plunger stroke when the cartridge is being forced into the sizing die mounted on the frame 6. The web is spaced sufficiently from the lower cross member 13 to afford widely spaced bearing surfaces for the plunger during the working portion of the plunger stroke.

The plunger bearing web 11 includes an access slot 16 which, as is shown in FIG. 3, provides for free and easy placement and removal of cartridge cases from the head of the plunger 15.

It will be noted, in FIG. 1, that the plunger guide 11 is disposed approximately midway of the length of the plunger stroke represented by a, in FIG. 1, with b representing the distance of the bearing web or plunger guide 11 from the lowermost position of the plunger 15. Thus the plunger or ram 15 is engaged and guided by the bore 12 of the bearing web 11 when the greatest force is exerted by the plunger, that is, when work is being done in the die on the cartridge case or bullet. The web 11 thus minimizes the possibility of the plunger being tilted or shifted out of axial alignment with the die supported or mounted in the upper cross head of the figure eight frame 6. It will, of course, be appreciated that even slight movement, tilt or shift of the plunger relative to the die axis would result in inaccuracies in cartridge case resizing or bullet swaging.

The figure eight frame of the reloading tool, embodying this invention, is supported by a base 29 indicated generally at 18 in FIGS. 1 and 2. The base includes a socket 20, provided with an internal bore 21, and vertical and horizontal flanges 22 and 24, respectively, disposed at right angles to each other providing a corner mount. The flanges are provided with holes to enable the base to be securely fastened to any supporting surface, such as on the edge of a table or work bench used for the reloading operation.

Extending downwardly from the lower end of the frame 6 is a stem 26 of bifurcated construction which projects from the lower end of the base socket 20. At its upper end the stem has a reduced diameter forming a regular groove 27 whereby a shoulder is provided for rotatably engaging the upper surface of the base. Thus, the entire frame is rotatable in the socket of the base. A set screw 28 may be provided to extend into the groove 27 of the stem 26 so as to maintain the frame and base in their assembled relation.

The stem 26 is made up of two spaced opposed semi-cylindrical legs 29 and 30. The outer surfaces of the legs 29 and 30 forming stem 26 are cylindrical so that the frame is freely rotatable in the socket 20 of the base 18. The inner surface contacting the legs 29 and 30 is also cylindrical providing a slide or guideway for the reciprocating motion of the plunger 15, particularly in the lower portion of its stroke. At their lower ends the legs 29 and 30 also serve to support a plunger operating lever 32.

The plunger 15 is operated by the handle or operating lever 32 which extends outwardly and upwardly from a forked arm 34 pivoted on a pin 36, supported adjacent the lower end of the legs 29 and 30 of the frame 26. A connecting link 38 is pivotally connected, as indicated at 40, to the end of arm 34, opposite the operating lever 32. The other end of connecting link 38 is pivotally connected to the lower end of the plunger 15 as shown at 42 in FIG. 1. As shown in FIG. 1, the plunger 15 may be raised by moving the operating lever 32 downward, to the right, and lowered by raising the operating lever 32.

Mounted on the frame of the reloading tool, is a primer arm 44 pivotally connected to the lower cross portion 13 of the figure eight frame. The primer arm 44 is pivoted on a pin 46 which extends between a pair of spaced arms 48 and 50 extending radially from the lower cross portion of the figure eight frame 6. The primer arm shown is an L-shaped bar having a hub portion 51 extending radially from the pivot pin 46 and an arm portion extending at right angles from the hub for fitting into a longitudinal slot 52 formed in the plunger 15. The upper end of the primer arm is provided with an upwardly extending primer insertion cup 53 for holding and inserting new primers in cartridge cases.

With the inner end portion of the primer arm 44 extending into the slot 52, the primer arm is automatically operated in response to plunger movement in a manner to be described below. In this regard, the inner wall of the slot 52 curves outwardly at its lower end as shown at 56. This provides a cam surface such that when the plunger 15 is raised as shown in FIG. 2, the primer arm...
44 is automatically cammed or tilted upwardly and outwardly to a convenient position for inserting a primer in cup 53 of the arm 44. In addition, the end face of arm 44 is disposed at the lower side of a downwardly extending bore 58 which extends from the slot 52 and opens through to the opposite side of the plunger 15. With this arrangement when the plunger is raised by the operating lever 32 for the sizing of a used cartridge case, the used primer is ejected, falls in slot 52 of the plunger 15, is deflected rearwardly by the end face of plunger arm 44 through the bore 58 to the rear of the reloading tool. A receptacle may be placed to catch ejected primers. There is thus no chance of expended primers interfering in any way with the proper insertion of a new primer cap.

Moreover, as shown in FIG. 2, the primer arm 44 is disposed upwardly at a most convenient oblique angle for ready insertion of a fresh primer. As previously mentioned, when the plunger 15 is thereafter lowered by raising the operating lever 32, a resized and deprimed cartridge is carried downwardly for repriming. In response to downward movement of the plunger, the primer arm 44 returns by gravity to its horizontal position (FIG. 1). The arm 44 is constructed so its center of gravity is inward of the pivot pin 46, thus no springs or other aids are required for its operation.

At the upper end the plunger 15 is provided with a removable adapter or shell holder 64 having a rim which fits around the rim of the cartridge case and thereby holds the cartridge case securely in place on the upper end of the plunger. A number of interchangeable adapters may be provided for various calibers of ammunition. The plunger slot 52 communicates, through a central hole 65 in the adapter 64, with the upper face of the plunger 15, best shown in FIG. 4. Thus, when the plunger is lowered by operation of the lever arm, the cartridge case carried by the plunger, is brought firmly down onto the primer arm 44. With a fresh primer extending from cup 53 of arm 44, a firm upward stroke of the lever arm securely and positively seats the new primer in the cartridge case. The resized, reprimed cartridge can then be readily removed from the plunger, the access slot 16 in the web facilitating removal of long cartridge cases.

If for any reason it is desired to shift the operating lever to the other side of the frame, this can be readily accomplished by simply removing the pivot pin 36 and rotating the arm 34 clockwise until the connecting link 38 is carried between the legs 29 and 30 to the right side of the frame. Reinsertion of the pin 36 completes the change-over as may be desirable for left handed operation of the reloading tool.

It will be noted that an access slot 66 for cartridge cases is provided in the plunger adapter 64. The slot is disposed at a substantial angle relative to the primer insertion arm 44. This offset arrangement between the cartridge receiving slot 66 and primer arm 44 facilitates cartridge insertion and removal since the primer arm is entirely out of the way of cartridge insertion and removal.

Having thus described this invention, what is claimed is:

1. In an ammunition reloading tool having a frame and plunger, a primer arm disposed on said frame and pivotable between primer receiving and primer inserting positions, said plunger including a longitudinally extending slot, for ejected primer caps, terminating at its lower end in an outwardly extending cam surface, said primer arm extending into said slot and being engaged by said cam surface when the plunger is raised, said arm thus being pivotable in response to reciprocable plunger movement whereby said arm is automatically moved by said plunger from an outwardly extending primer receiving position to a generally horizontal position for inserting a primer into a cartridge, said longitudinal slot terminating at its lower end in communication with a port extending from the slot through the wall of the plunger, the end of said primer arm terminating at said port when the plunger is at one end of its stroke whereby said primer arm serves to deflect ejected primers from said slot through said port.

2. An ammunition reloading tool comprising a frame having a generally upright figure-eight configuration having upper, central and lower cross portions, a plunger carried by said tool having an upright reciprocable stroke within the frame, the upper cross portion of said frame including means for mounting ammunition sizing dies, the head of said plunger being provided with means for carrying ammunition components, said plunger having an axially extending slot disposed to receive primers ejected from cartridge cases carried on said plunger and a port extending from said slot through the plunger wall, a primer arm pivotably mounted on said tool and extending into the slot of said plunger and including means to deflect primers through said port, the lower end of said slot being inclined to provide a cam surface engaged by the inner end of said primer arm, said primer arm being automatically operated between a horizontal position for insertion of a primer into a cartridge case carried by the plunger and an upwardly inclined position for receiving primers in response to the vertical stroke of said plunger.

3. An ammunition reloading tool as set forth in claim 2 and in which said primer arm includes an upwardly opening cup for receiving and setting primers in deprimed cartridge cases.

4. An ammunition reloading tool as set forth in claim 2 in which said frame is pivotably mounted in a case and has a stem portion extending below the base, said plunger being carried by said stem, an operating lever pivotably connected to said plunger and means for changing the position of the operating lever relative to said frame.

5. An ammunition reloading tool as set forth in claim 2 in which said means for carrying ammunition components on the head of said plunger includes a slot opening to a rim which fits around the rim of a cartridge case, said slot and the primer arm being offset a substantial angle one relative to the other.

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