This invention relates to a cartridge case trimmer, and more particularly to a device adapted to be utilized for trimming the cartridge cases of rifle or revolver ammunition prior to re-loading the same.

A primary object of this invention is to provide an improved cartridge case trimmer adapted for use by sportsmen and others who re-load their own ammunition.

Another object of this invention is to provide a cartridge case trimmer which will simultaneously perform several trimming operations.

Another object of this invention is to provide a device for removing excess brass from the inside of cartridge case necks.

A further object of this invention is to provide a device for shortening the length of cartridge case.

A further object of this invention is to provide a device for chamfering a cartridge case neck at the inside of its opening.

A further object of this invention is to provide a device for chamfering a cartridge case neck at the outside of its opening.

A further object of this invention is to provide a cartridge case trimmer which will simultaneously perform the above described trimming operations.

A still further object of this invention is to provide a cartridge case trimming tool that is adjustable to provide the desired degree of inside and outside chamfer to a cartridge case neck.

Another object of this invention is to provide a cartridge case trimmer which embodies an improved means for holding a cartridge case head.

Another object of this invention is to provide a cartridge case trimmer in conformity with the above objects which is provided with holding means adapted to receive various size cartridges.

Still another object of this invention is to provide a cartridge case trimmer having a holder which will enable a user to perform reaming operations on the primer pocket of a cartridge case held therein.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevation of the device showing the cutter head in position for starting a cut or trimming operation and further showing a cartridge case in dotted lines;

Figure 2 is a plan view of the device as shown in Figure 1;

Figure 3 is a vertical section taken along the plane of section, line 3—3 of Figure 1;

Figure 4 is another vertical section taken along line 4—4 of Figure 1 and showing details of the cutter head assembly;

Figure 5 is a vertical section taken substantially along line 5—5 of Figure 3 and showing details of construction of the cartridge case holder;

Figure 6 is an end view of the collet shown in Figure 5;

Figure 7 is a vertical section taken through the collet and showing the primer pocket reaming tool associated therewith;

Figure 8 is a vertical section taken substantially along line 8—8 of Figure 7; and

Figure 9 is an enlarged view of the cutter head and showing the manner of performing cutting operations upon the cartridge case neck, portions of the cartridge case being broken away.

By way of explanation, it is pointed out that this device performs the necessary trimming operation on conventional cartridge cases but is particularly adapted to cope with the problem involved in trimming reformed cartridge cases.

Due to the high cost of cartridges, many thousands of ranchers, sportsmen, target shooters and hunters are re-loading their own ammunition and in many instances, re-forming used and discarded cartridge cases, such as Government 30—56 cartridge cases. It is possible in this case to reduce the neck diameter cartridge case neck to smaller calibers, such as .22, .25 and .270.

When this is done, the neck wall of the case becomes too thick to receive the proper size bullet and an attempt to force the bullet into the neck enlarges the latter to an extent such that the cartridge will not fit properly within the chamber of a rifle or firearm. Furthermore, the cases become elongated during the re-forming operation, such condition effecting a poor fit within the firearm chamber.

Of course, when the above conditions exist, there is a great danger that the cartridge head will be blown off and the firearm bolt thrown back at the shooter and frequently the breech is split.

In order to obviate this potential danger, it is necessary to perform a series of trimming operations on such re-formed or reformed cartridge cases to effect a proper fit thereof within the firearm chamber. The steps necessary are the removal of excess brass from the inside of the cartridge case neck, reducing the over-all length of the cartridge case by trimming off the end of the neck, chamfering the outside of the case neck and also chamfering the inside of the case neck. All of these steps are necessary for proper fit of reformed cartridge cases within the chamber.

With these desired results in mind, reference is now had more particularly to the figures of the drawings wherein reference numeral 10 indicates generally a base of the novel cartridge case trimmer. The base is provided with an inverted trapezoidal track 12 and has secured thereto or formed integrally therewith an upstanding support 14 at one end. Intermediate the ends of the base are provided one or more apertures 16 which are counterbored from the upper side thereof as indicated by the reference numeral 18 and it will be readily appreciated that the apertures are provided for the purpose of receiving bolts or screws for securing the base to a suitable support, if desired.

Slightly received on the track 12 is a cartridge case holder indicated generally by the reference numeral 20 and which includes a support 22 having a chamber or bore therein receiving a collet indicated generally by the reference numeral 24.

With reference more particularly to Figure 3, the lower end of the support 22 is formed to receive trapezoidal track 12 but is of greater width than the track, providing a space 26 at one side thereof. The space is preferably formed as a recess and has disposed therein a hardened shim 28, which is adapted to be engaged by the set screw.
30 threaded into the support to clampingly secure support 22 at any desired position along the extent of track 12. The steel shim is provided to prevent marring or damage to the side surface of track 12 such as would occur if no shim were used. This effects a more precise and accurate positioning of the support which would be difficult to control were the trackway ganged or damaged whereupon the set screw would tend to enter into an old recess or gouge.

As seen more clearly in Figures 3, 5 and 6, the aforementioned collets 24 has its forward end tapered on its outer surface as indicated at 32 and is diametrically split in a longitudinal direction from its forward end presenting the bore gripping portions 34 having spaces 36 therebetween. The forward end of support 22 is also tapered as at 38, and an intermediate portion 48 of the collet being threaded and engaged within the threaded portion 42 of the support will, upon inward threading of the collet in the support, engage against the tapered portion 32 of the bore collet gripping portion to force the same inwardly to grippingly engage a cartridge case disposed therein.

In order that the collet may grippingly engage cartridge case heads of various sizes, the inner diameter of the forward end thereof is provided with a series of stepped gripping surface 44, 46 and 48. The smallest opening preferably receives .22 Hornet and Remington .222 type cases, the middle opening receiving .28, .218, 25/20, 30/20, .25, .30, and .32 Remington type cases and the large opening receives the .06 type as well as the 30/30 type rimmed heads. An additional single collet may be provided for Magnum cases.

For the purpose of rotating the collet, the rear end thereof may be formed as an enlarged head 50 having hand grip bars 60 extending radially therefrom. Referring now more particularly to Figures 5 and 7, the collet has a concentrically disposed longitudinally extending bore 62 therein and which extends entirely through the collet. When a cartridge case 64 has its head 66 clampingly engaged within one of the collet openings 44, 46 or 48, the cartridge case primer pocket 68 will be disposed in concentric registry with collet bore 62. As shown in Figure 7, a reaming tool 70 is inserted through the rear end of the collet and carries at its free end a reaming tool 72 which effectively engages within the primer pocket 68 and removes all burrs and excess of foreign material therefrom. The other end of the tool is provided with an enlarged knurled head 74 and the rearward end of the tool shank 76 is provided with an enlarged shoulder portion 78 which engages within bore 62 to properly guide and center the reaming tool.

With reference now more particularly to Figures 1, 2, 4 and 9, it will be seen that the support 14 has a bore therein, coaxial with the collet bore 62, which receives a shaft 80 for slidding and rotational movement therein. The inner or collet end of shaft 80 is provided with a cutter head 82 and the opposite end of the shaft is provided with a crank 84 having a hand and knob 86 rotatably mounted thereon. Also provided on the outer end of shaft 80 is a stop collar 88.

Cutter head 82 is provided with a concentric longitudinal recess or bore 90 into which the shank 92 of a pilot is adjustably received. The free end of the pilot terminates in a reamer 94 and the pilot is secured in various desired extended positions relative to the cutter head by means of the set screw 95 which engages the pilot shank. The cutter head is also provided with a pair of diametrically opposed and radially extending slot or notches which slidably and adjustably receive an outside chamfering cutter blade 98 and a combined cutter blade 100, respectively. Each of the cutter blades may be adjustably secured in their desired positions by the set screws 102.

The outside chamfering cutter blade 98 is provided with a beveled cutting edge 104 which performs the actual chamfering. Cutter blade 100 is provided with an inside chamfering edge 106 and a cartridge case neck end cutter edge 108.

In operation, set screw 30 is backed off to release the cartridge case holder 20 which is extended as far away from the support 14 as possible. A pilot of proper size to conform to the dimension of the cartridge case to be trimmed is selected and its shank 92 inserted within the bore 90 of cutter head 82 and secured with set screw 95. The cutter blade 98 is positioned by set screw 102 radially outwardly from cutter head 82 so as to perform no chamfering of the cartridge case and with a case 64 secured in the collet 24, cutter blade 100 may be adjusted by means of its set screw 102 to perform the desired degree of amount of inside chamfering to the neck 110 of the cartridge case 64. This, of course, is accomplished by rotating shaft 80 through crank 84 with the cartridge case neck 110 lightly in engagement with end cutting edge 108. When the desired degree of inside chamfer has been acquired and the cutter blade 100 secured accordingly, the same operation is performed with cutter blade 98 in various positions to effect the desired degree or amount of outside chamfer.

When both of these adjustments have been accomplished, pilot 94 is readjusted inwardly so that it abuts the end plate of the cutter head. At this point, it is necessary to secure a master cartridge case within the collet so as to position the same for cutting subsequent cartridge cases to the proper length. The master case is one which has previously been cut to the proper finished length and it is necessary, in order to obtain the tool set up effecting subsequent cutting operations of the same length, merely to push inwardly on the crank 84 until stop collar 88 engages against support 14 whereupon the master case, being rigidly secured within the collet, is brought into engagement with the end cutting edge 108 by sliding the collet 24 on the support 20 whereupon set screw 30 is manipulated to secure the support 20 in place. The cutter shaft and cutter head are then slid outwardly away from the master case neck and the collet loosened by manipulation of the hand bar 60 and the master case removed.

The tool is now properly set up for subsequently cutting and trimming unfinished cartridge cases. To finish such a case, the cutter head is maintained in the position shown in Figure 1 and the cartridge head inserted into the collet whereupon the collet is moved into the neck as shown in Figure 2. The collet is then tightened by rotating the crank 84 until stop collar 88 engages against support 14, the desired and proper cutting and trimming operation will be performed on the case.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:
1. A cartridge case trimmer comprising an elongated base, a cartridge case holder positioned adjacent one end of said base and adapted to frictionally engage the head of a cartridge case, a first tool mounted in said cartridge case holder for axially sliding and being rotatable for reaming the primer pocket of a cartridge case, a tool support rigidly affixed adjacent the other end of said base, means for securing said cartridge case holder to said base in selected positions thereon toward and away from said tool support, a second tool, said second tool including a shaft slidably and rotatably received in said tool support and provided...
with an abutment collar for limiting inward sliding movement of the shaft toward said holder, a pilot secured to the inner end of said shaft for reaming the inside of a cartridge case neck, a cutter blade carried by said shaft and having portions for simultaneously chamfering the inside and trimming the end of a cartridge case neck, and means for imparting sliding and rotary movement to said shaft.

2. The combination of claim 1, wherein a second cutter blade is carried by said shaft, said second cutter blade having a portion for chamfering the outside of a cartridge case neck.

3. The combination of claim 1, wherein a second cutter blade is carried by said shaft, said second cutter blade having a portion for chamfering the outside of a cartridge case neck, said blades being radially adjustable of said shaft.

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