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DEVICES FOR MEASURING AND TRIMMING GUN CARTRIDGE CASINGS

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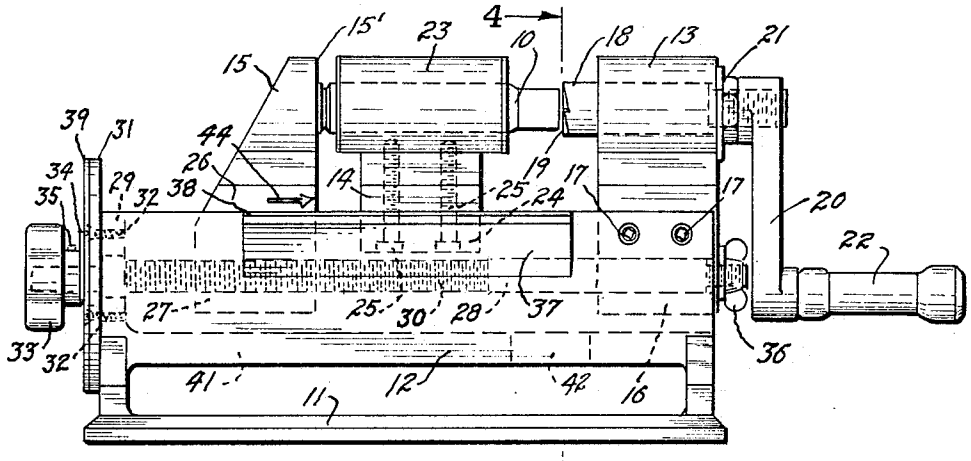


Fig_1

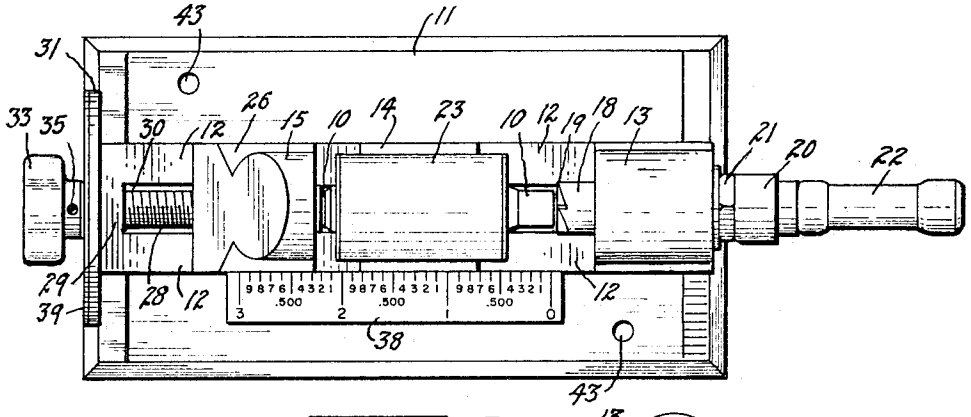


Fig_2

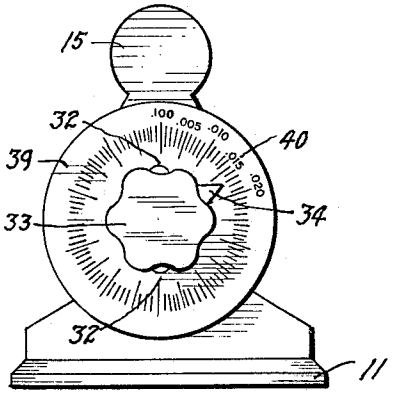


Fig_3

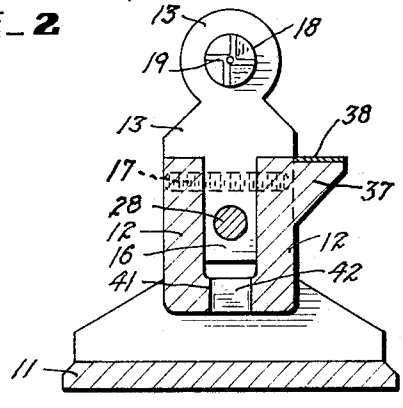


Fig_4

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DEVICES FOR MEASURING AND TRIMMING GUN CARTRIDGE CASINGS

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This invention relates to a gun cartridge casing measuring and trimming device more particularly for use in reloading used cartridges for further firing.

The working pressure of present high-power rifle cartridges averages 50,000 p.s.i. and high power small arms cartridges averages 35,000 p.s.i. These extremely high pressures on the wall of the cartridge shell often result in an elongation of the shell so that when the shell is reloaded the cartridge will be longer than the tolerances of the gun chamber permit. This elongation may restrict the forward movement of the casing as it approaches its firing position in cartridge chamber and thus create a wedging action on the projectile and the forward extremity of the casing. This creates an extremely dangerous condition due to the tremendous increase of pressure necessary to dislodge the restricted projectile when the cartridge is fired.

The principal object of this invention is to provide a simple, easily-used device in which a fired cartridge casing may be placed and which will quickly and accurately trim away the excess length, if any, therefrom to permit accurate reloading of the cartridge.

It is, of course, necessary to measure or caliper the length of a used cartridge casing to determine if the length is correct for accurate reloading. This is usually done by means of calipers or tolerance guages and if excess length appears, the casing is then trimmed to the correct length by any available means.

Another object of this invention is to combine the measuring step with the trimming step and provide a trimming device with an accurate micrometer arrangement which can be preset for the proper length of a cartridge casing, in which used casings may be inserted and trimmed to the exact preset length so that the casing will be simultaneously measured and trimmed in one operation and with a single device.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is made to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

FIG. 1 is a side elevational view of the combined shell casing measuring and trimming device;

FIG. 2 is a top plan view thereof;

FIG. 3 is an end view; and

FIG. 4 is a cross section therethrough taken on the line 4—4, FIG. 1.

In the drawing a typical rifle shell casing is illustrated at **10**. The invention comprises a base plate **11** supporting a pair of parallel, spaced-apart guide ways **12** which in turn support a head stock **13**, a casing supporting block **14** and a casing stop block **15**. The guide ways **12** are joined along their bottom edges by means of a unitary spacing web **41** which maintains them in parallel spaced relation. The head stock **13** rests upon the ways **12**, at the forward extremity of the latter, and is provided with a longitudinal tenon portion **16** which extends downwardly between the ways **12** and is rigidly secured thereto by means of horizontal, laterally extending screws **17**.

The head stock rotatably supports a trimmer shaft **18** above the ways **12** with its axis positioned parallel to, and intermediate of the ways. Milling teeth **19** are formed on the forward extremity and a hand crank **20** is threaded on the rear extremity of the trimmer shaft. A jam nut **21** is threaded against the crank **20** to lock the latter in the desired longitudinal position on the trimmer shaft. The hand crank is provided with the eccentrically positioned handle **22** by means of which the shaft may be manually rotated.

The casing supporting block **14** is slidably mounted on the ways **12** and can be lifted from and replaced on the ways. The block **14** is provided with a longitudinally and downwardly extending tenon **24** which can be inserted between the ways **12** to accurately guide the block **23** in longitudinal alignment therewith as it is moved longitudinally thereof. The casing supporting block **14** supports a casing guide sleeve **23** in axial alignment with the axis of the trimmer shaft **18**. The sleeve **23** is secured to the block **14**, in any desired manner such as by means of vertical attachment screws **25** extending upwardly through the block and threaded into the guide sleeve, and is interchangeable to receive casings of differing lengths and differing diameters.

The stop block **15** is formed on a supporting base portion **26** which slidably rests on the ways **12** and which is guided longitudinally of the ways by a tenon portion **27** extending snugly downward between the ways.

A micrometer shaft **28** is journalled at its rear extremity in the tenion portion **16** of the head stock **13** and at its forward extremity in a front end wall **29** extending between the forward extremities of the ways **12**. The micrometer shaft is provided with micrometer threads **30** and is threaded through the tenon portion **27** of the stop block **15** so that rotation of the shaft **28** causes the stop block to travel longitudinally of the ways **12**. The forward extremity of the micrometer shaft **28** is reduced in diameter and the reduced portion passes axially through and projects beyond a scale disc which is secured against the front end wall **29** by suitable screws **32**. A finger knob **33** containing a pointer **34** is fixedly mounted on the projecting extremity of the shaft **28** by means of a suitable set screw **35**. The rear extremity of the shaft **28** is also reduced in diameter and threaded to receive a locking nut **36** which, when tightened against the tenon portion **16** of the head stock **13** tends to exert tension in the micrometer shaft **28** to show the finger knob **33** against the scale disc **31** to lock the micrometer shaft in any desired preset position.

A supporting ledge **37** is formed on the outside of one of the ways **12** to fixedly support a measuring scale **38** thereon. The zero (0) position of the measuring scale **38** is transversely aligned with the tops of the milling teeth **19** when the cutter shaft is completely inserted in the head stock **18**. The measuring scale is preferably divided into inches and tenths of inches and it indicates the distance between the rear face of the stop block **15**, indicated at **15**; and the tops of the milling teeth **19**. An indicating arrow **44** is stamped in the side of the base **26** to direct the operator's attention to the face **15'** of the stop block.

The scale disc **31**, or a scale plate **39** mounted thereon, carries annular vernier scale markings **40** upon which the pointer **34** indicates. The pitch of the threads on the micrometer shaft **28** is 10 to the inch. Therefore, each revolution of the knob **33** moves the face **15'** of the stop block $\frac{1}{10}$th of an inch along the measuring scale **38**. The annular vernier scale markings **40** are divided to indicate intervals of $\frac{1}{10000}$ of an inch of movement of the stop block face **15'**.

Let us assume that the device is to be used to measure and trim rifle casings the correct length of which should

be 2.2154". The locking nut **36** is loosened and the micrometer shaft is rotated to bring the face **15'** of the stop block **15** to the 2.2000" indication on the measuring scale **12** and the knob **33** is then rotated forwardly to bring the pointer **34** to the .0154 indication on the annular vernier scale **40**. The locking nut **36** is now tightened to lock the micrometer shaft against rotation.

The trimmer shaft **18** is now withdrawn into the head stock **13** and the guide sleeve **23** is lifted from place. A used cartridge shell casing **10** is now inserted in the guide sleeve and the latter with its supporting block **14** are replaced on the ways **12** forwardly of the stop block **15**. The trimmer shaft is now rotated and pushed forwardly to slide the sleeve **23**, and its contained casing **10**, forwardly until it contacts the face **15'** of the stop block **15** which stops further longitudinal movement of the casing. If the casing is of the correct length the milling teeth **19** will rotate against the end thereof without any cutting action. If the casing has an excess length, the teeth will exert a cutting action to quickly remove the excess length. The casing is prevented from rotating in the guide sleeve **23** by frictional contact with the sleeve. The spacing web **41** is preferably provided with a chip hole **42** through which the removed material may be discharged and mounting holes **43** are provided in the base plate **10** by means of which the sleeve can be secured to a supporting surface.

While a specific form of the improvement has been described and illustrated herein, it is to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A cartridge casing measuring and trimming device comprising:

(a) a pair of horizontal, parallel, spaced-apart ways;

(b) a head stock mounted on and arising from the rear extremities of said ways;

(c) a horizontal trimmer shaft journalled in said head stock, above, parallel to, and intermediate said ways;

(d) milling teeth formed on the forward extremity of said trimmer shaft;

(e) shell casing supporting means supported from said ways and adapted to support a casing forwardly of and in alignment with said trimmer shaft;

(f) stop means supported by said ways forwardly of said casing supporting means to be contacted by said shell casing for limiting the forward movement of the latter;

(g) means for rotating said trimmer shaft to cause said milling teeth to trim away one extremity of said shell casing;

(h) a threaded shaft journalled between and parallel to said ways, said stop means being threaded on said threaded shaft; and

(i) means for rotating said threaded shaft to cause said stop means to travel along said ways.

2. A cartridge casing measuring and trimming device as described in claim **1** having:

(a) a measuring scale fixedly mounted on one of said ways alongside the path of movement of said stop means for measuring the amount of movement of the latter.

3. A cartridge casing measuring and trimming device as described in claim **2** having:

(a) an annular scale about one extremity of said threaded shaft;

(b) and a pointer fixed on said latter extremity for indicating positions on said annular scale to determine the degree of rotation of said shaft.

4. A cartridge casing measuring and trimming device as described in claim **1** having:

(a) means for locking said threaded shaft against rotation when desired.

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RICHARD H. EANES, JR., *Primary Examiner.*