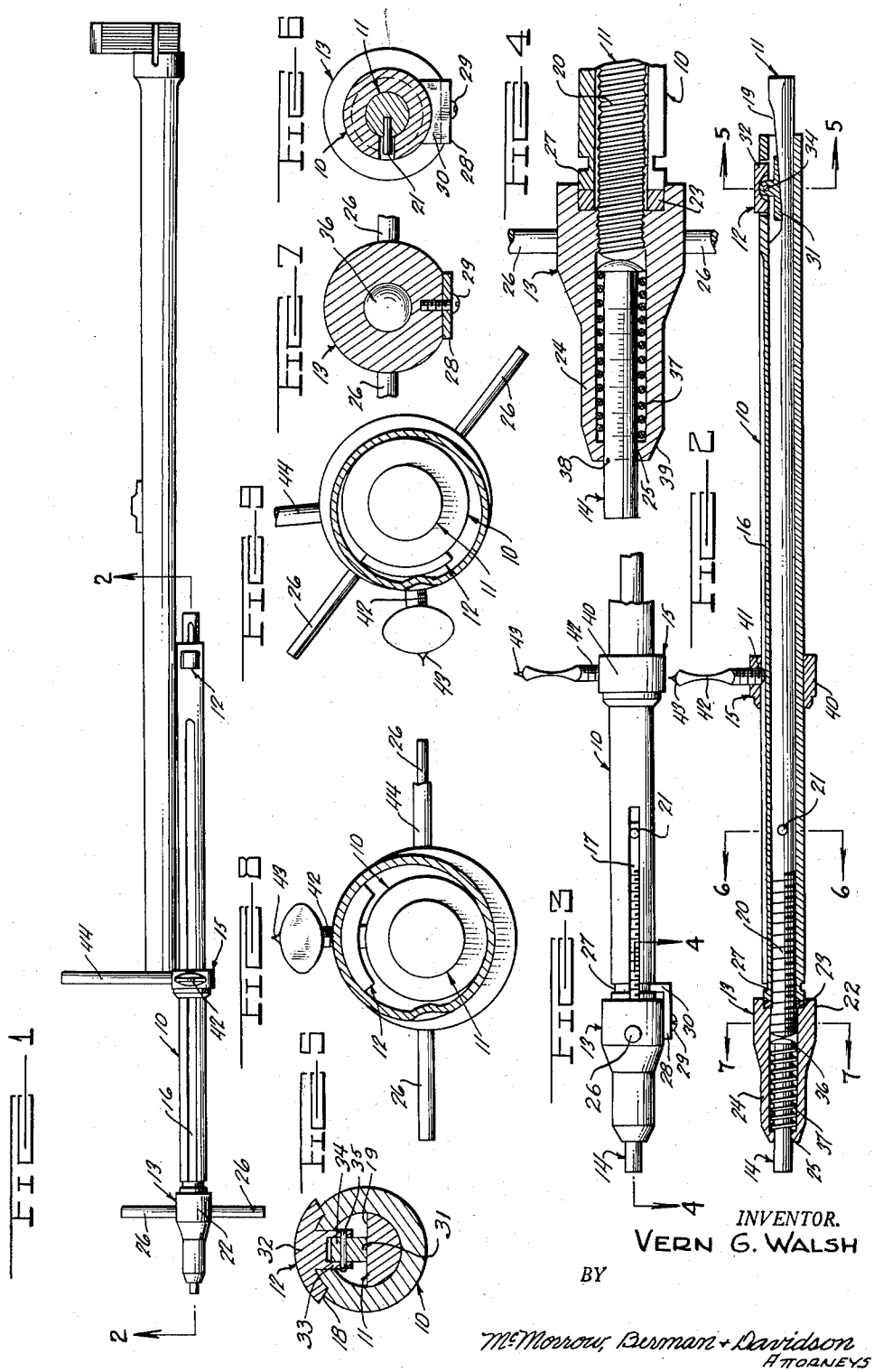
Dec. 2, 1952 V. G. WALSH 2,620,012

GUN REPAIR TOOL

Filed May 31, 1949



INVENTOR.
VERN G. WALSH

BY

McMorrow, Berman + Davidson
ATTORNEYS

Patented Dec. 2, 1952

2,620,012

UNITED STATES PATENT OFFICE

2,620,012

GUN REPAIR TOOL

Vern G. Walsh, Fredericksburg, Va.

Application May 31, 1949, Serial No. 96,170

3 Claims. (Cl. 153—80)

1

This invention relates to gun repair tools, and more particularly to a hand tool for removing dents from shotgun barrels and similar tubular structures.

It is among the objects of the invention to provide an improved gun repair tool for removing dents from shotgun barrels, which tool is effective to accurately remove a dent and restore the gun barrel to its original circular cross-sectional shape without stretching the metal of the barrel or producing any bulge in the portion of the barrel operated upon and without affecting any other portion of the barrel, which is readily adapted for use in gun barrels of different bores or gauges, which will easily reach a dent regardless of the location of such dent longitudinally of the gun barrel, and which is simple and durable in construction, economical to manufacture, and extremely easy to use.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawing, wherein:

Figure 1 is a longitudinal elevation of a gun barrel repair tool illustrative of the invention shown in position alongside a conventional gun barrel to measure the distance of a dent in the barrel from one end of the latter;

Figure 2 is a longitudinal, medial cross-section through the gun barrel repair tool, taken substantially on the line 2—2 of Figure 1;

Figure 3 is a longitudinal elevation of a fragmentary end portion of the tool with the tool rotated approximately 90-degrees from the position illustrated in Figure 1;

Figure 4 is a longitudinal, medial cross-section on an enlarged scale of a fragmentary end portion of the tool and is taken substantially on the line 4—4 of Figure 3;

Figure 5 is a transverse cross-section on the line 5—5 of Figure 2;

Figure 6 is a transverse cross-section on the line 6—6 of Figure 2;

Figure 7 is a transverse cross-section on the line 7—7 of Figure 2;

Figure 8 is an end elevation of the tool disposed in a gun barrel, the barrel being shown in transverse cross-section; and

Figure 9 is a view similar to Figure 8 showing the tool in a different operative position in the gun barrel.

With continued reference to the drawing, the improved gun barrel repair tool comprises, in

2

general, an elongated, tubular shaft 10, an anvil 12 positioned adjacent to and spaced from one end of the shaft 10 and mounted on the shaft for projectile and contractile movement transversely of the shaft, and a rod 11 extending through the shaft 10 and mounted for sliding movement longitudinally thereof. The rod 11 adjacent one end thereof is provided with a means or cam surface 19 which engages the anvil 12 to effect the projectile movement upon sliding movement of the rod 11 in one direction. An elongated sleeve or nut 13 is rotatably supported on the other end of the rod 11 and abuts against the other end of the shaft for effecting the sliding movement of the rod. A graduator plunger is resiliently mounted on the nut 13. An apertured abutment 15 is slidably mounted upon the shaft 10.

The shaft 10 is an elongated metal tube having in one side thereof a longitudinally-extending, flat groove 16 extending entirely to one end of the shaft, but terminating short of the opposite end of the latter, and having a longitudinally-extending slot 17 which is materially shorter than the groove 16 and is spaced approximately 90 degrees around the tubular shaft from the groove. This slot opens to the same end of the shaft to which the groove 16 extends, and the shaft is provided, near its opposite end, and in line with the groove 16 with a stepped, rectangular opening 18 through which the anvil 12 extends, the larger area of the opening 18 being at the outside of the shaft.

The rod 11 is recessed near one end to provide, at the end of the shaft 10 carrying the anvil 12, the inclined cam surface 19 underlying the anvil, and is provided, at its opposite end, with an externally screw-threaded portion 20. A pin 21 projects laterally from the rod 11 near the inner end of the screw-threaded portion 20 of the latter, and is slidably received in the slot 17 in the shaft 10 to maintain the rod against rotation relative to the shaft.

The nut 13 comprises an internally screw-threaded, cylindrical portion 22 which is threaded onto the screw-threaded portion 20 of the rod 11 and bears against the adjacent end of the shaft 10, a hardened thrust washer 23 preferably being disposed in a recess in the end of the nut surrounding the screw-threaded aperture therein. An elongated boss 24 extends outwardly from the cylindrical portion 22 of the nut and is provided, at its end remote from the cylindrical portion 22, with a restriction 25 which receives the plunger 14 with a close slid-

ing fit. Nut-turning handles 26 project laterally outward from the cylindrical portion 22 of the nut in positions substantially diametrically opposed to each other, so that the nut can be easily turned on the screw-threaded portion of the rod. Near its end engaged by the nut 13, the shaft 10 is provided with an annular groove 27, and a latch plate 28 is secured to the nut by suitable means, such as the screw 29, and has a detent 30 received in the groove 27 to hold the nut 13 against movement toward and away from the adjacent end of the shaft 10.

Since the rod 11 is slidable within but is held against rotation relative to the tubular shaft 10, and since the nut 13 is threadedly engaged with the rod but is held against movement toward and away from the shaft, rotation of the nut will be effective to shift the rod slidably within the shaft.

The anvil 12 is a two-part structure including a slide 31 bearing upon the inclined cam surface 19 of the rod 11, and a rectangular block 32 fitting in the enlarged outer portion of the opening 18 in the shaft 10, and provided with a bifurcated tongue 33 extending through the restricted portion of the opening 18. The runner 31 carries, substantially at its mid-length location, an outwardly-extending apertured lug 34 which is received between the two sides of the bifurcated portion 33 of the anvil block, and a pivot pin 35, extending transversely of the shaft 10, pivotally secures the block portion to the runner portion of the anvil.

The outer surface of the anvil block is rounded substantially in conformity with the cylindrical curvature of the shaft 10, and the pin 35 provides a sufficient freedom of rocking motion for this block portion of the anvil, so that outward pressure exerted on the anvil by the cam surface 19 of the rod 11 will be directed entirely against a dent in the gun barrel and not against the portion of the barrel at one end or the other of the anvil block. The inclined surface 19 is inclined outwardly toward the adjacent end of the rod, so that when the nut 13 is threaded inwardly on the rod 11, the anvil will be forced outwardly of the shaft 10.

The plunger 14 is an elongated pin having a head 36 on its end disposed within the nut 13, this head being rounded to provide a rounded bearing surface for the adjacent end of the rod 11. A spring 37 is disposed between an internal shoulder provided by the restriction 25 at the outer end of the boss 24 of nut 13, and the head 36 of plunger 14, to resiliently urge the plunger inwardly of the nut, and the plunger is provided with longitudinally-extending gradations 38 which are visible at the outer end of the nut 13 to indicate the position of the rod 11 and the anvil 12 relative to the shaft 10. The nut 13 is preferably conically tapered at its outer end, as indicated at 39, to facilitate the reading of the graduations on the plunger 14.

The abutment 15 comprises an apertured ring portion 40 which slidably receives the shaft 10 and is provided with a screw-threaded aperture 41 extending through the wall thereof. A set screw 42 in the form of a thumbscrew or wing screw is threaded through the aperture 41 in the abutment 40 and engages in the groove 16 to lock the abutment in adjusted position longitudinally of the shaft 10, and also secures the abutment to the shaft against rotation relative to the latter. This set screw 42 is provided, at its outer end, with a sighting point 43 for a purpose which will presently appear. A handle 44 extends laterally outward from the ring portion 40 of the abutment for rotating the tool, under certain conditions, and for holding the tool against rotation while the nut 13 is being threaded down on the screw-threaded portion of the shaft 11.

In using the tool, after the gun barrel has been removed from the stock and forearm of the gun, the tool is laid alongside the barrel with the anvil opposite the dent to be removed, as illustrated in Figure 1. The shaft 10 of the tool will extend beyond one end or the other of the gun barrel, depending upon the location of the dent longitudinally of the barrel. In the arrangement illustrated in Figure 1 the shaft extends beyond the muzzle end of the barrel. With the shaft 10 held against the barrel so that the anvil 12 is opposite the dent, and with the set screw 42 loosened, the abutment 15 is moved along the shaft 10 until it bears against the adjacent end of the gun barrel, whereupon the set screw 42 is tightened to lock the abutment in adjusted position longitudinally of the barrel. With the nut 13 loosened, and the anvil 12 fully retracted, the anvil end of the tool is then inserted into the barrel until the abutment bears against the end of the barrel and the tool is rotated until the anvil is disposed at a location substantially 90 degrees from the location of the dent in the barrel, this position of the tool being particularly illustrated in Figure 8. With the anvil at the location of Figure 8 the sighting point 43 indicates that the anvil is in the 90 degree position with respect to the dent. The nut 13 is then tightened until the anvil is brought firmly into contact with the inner surface of the barrel, but not sufficiently to, in any way, change the shape of the barrel. With the nut thus tightened, the graduation of the plunger 14, at the outer end of the nut 13, is carefully noted and the screw is then loosened to again retract the anvil. The tool is then rotated by the handle 44 from the position illustrated in Figure 8, to the position illustrated in Figure 9 in which the anvil 12 is directly opposed to the dent in the gun barrel. The nut 13 is then tightened again until the same graduation on the plunger 14 comes to the outer end of the nut 13. When this occurs, the dent will have been exactly forced out of the gun barrel, and the barrel restored to its original, circular, cross-sectional shape without any overstretching of the metal or any bulging of the barrel at or near the location of the dent. The nut 13 may now again be loosened to retract the anvil and the tool removed from the gun barrel. During the operations of tightening and loosening the nut 13, the latch plate 28 holds the nut to the end of the shaft 10 and causes the rotation of the nut to impart longitudinal movement to the rod 11 relative to the shaft 10, so that the cam surface 19 will be moved back-and-forth under the anvil 12, and the anvil projected or retracted as the nut 13 is turned.

While the tool is particularly adapted for removing dents from shotgun barrels, it may obviously be used to straighten other tubular structures, if desired.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the

appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are, therefore, intended to be embraced therein.

What is claimed is:

1. A repair tool for removing dents from gun barrels comprising an elongated, tubular shaft of a size to slide into a gun barrel and having a horizontally-extending groove therein and a longitudinally-extending slot shorter than and spaced from said groove and opening to one end of said shaft, a rod slidable in said shaft and having an inclined cam surface near one end of said shaft and an externally screw-threaded portion extending outwardly of the opposite end of said shaft, said shaft having an opening therein adjacent said one end, an anvil extending through said opening and bearing upon said inclined cam surface, an elongated nut threaded onto the screw-threaded portion of said rod and bearing against said opposite end of said shaft, nut-turning means on said nut, a graduated plunger in said nut bearing at one end against the adjacent end of said rod and projecting at its opposite end out of said nut for rendering the graduations thereon indicative of the position of said rod and said anvil relative to said shaft, an apertured abutment slidably received in said shaft and having a screw-threaded aperture therein, a set screw threaded through said aperture and engaging in the groove of said shaft to adjustably position said abutment longitudinally of said shaft so that said anvil will be located at the position of a dent in a gun barrel when said shaft is inserted into the barrel and said abutment is brought to bear against one end of the barrel, and a handle on said abutment for rotating said shaft to bring said anvil directly under the dent so that the dent can be removed by turning said nut on said rod while said tool is held against rotation by said abutment handle to force said anvil outwardly of said shaft.

2. A gun repair tool comprising an elongated tubular shaft, an anvil carried by said shaft adjacent one end of the latter, a rod extending through said shaft and having near one end an inclined cam surface bearing against said anvil to force the latter outwardly of said shaft when said rod is moved longitudinally relative to said shaft, a screw-threaded portion at the opposite end of said rod, a nut threaded onto said rod and bearing against the adjacent end of said shaft to move said rod longitudinally of said shaft, an apertured abutment slidably receiving said shaft, and means carried by said abutment and engaging said shaft to lock the abutment in adjusted position longitudinally of the shaft, said shaft having an opening therein receiving said anvil, and said anvil comprising a runner slidably engaging the inclined cam surface on said rod and a block pivotally connected to said runner.

3. A gun repair tool comprising an elongated tubular shaft, an anvil positioned adjacent to and spaced from one end of said shaft and mounted on said shaft for projectile and contractile movement transversely of said shaft, said anvil including a runner positioned within said shaft adjacent to and spaced from said one end of said shaft, and a block projecting transversely through said shaft and having the lower end pivotally connected to said runner, a rod extending through and mounted in said shaft for slidable movement longitudinally of said shaft, means on said rod adjacent to one end thereof and engageable with the under surface of said runner to effect the projectile movement of the anvil upon sliding movement of the rod in one direction, and a sleeve rotatably supported on the other end of said rod in threaded engagement therewith and abutting the other end of said shaft for effecting the sliding movement of said rod.

VERN G. WALSH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
199,350	Caswell	Jan. 22, 1878
503,393	Vollmer	Aug. 15, 1893
641,646	Parker	Jan. 16, 1900
795,300	Nichols	July 25, 1905
1,157,073	Baash	Oct. 19, 1915
1,753,005	Grady	Apr. 1, 1930
2,085,057	Williams	June 29, 1937
2,203,175	Oliver	June 4, 1940
2,275,614	Dewald	Mar. 10, 1942
2,538,859	Bradfield	Jan. 23, 1951

FOREIGN PATENTS

Number	Country	Date
7,966	Great Britain	Apr. 30, 1900
608,933	Great Britain	Sept. 22, 1948