B. ROSE.

MANUFACTURE OF GUN BARRELS.

APPLICATION FILED FEB. 21, 1917.

1,316,509. Patented Sept. 16, 1919.

Fig. 1.



Fig. 2.



Fig. 3.

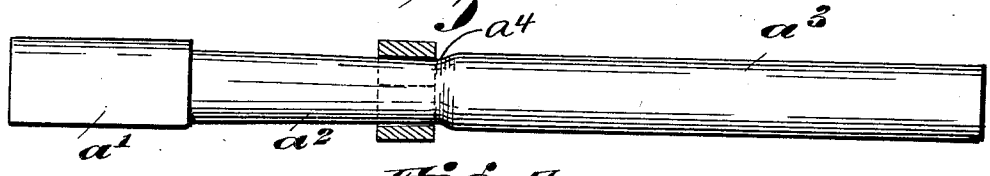


Fig. 4.



Fig. 5.

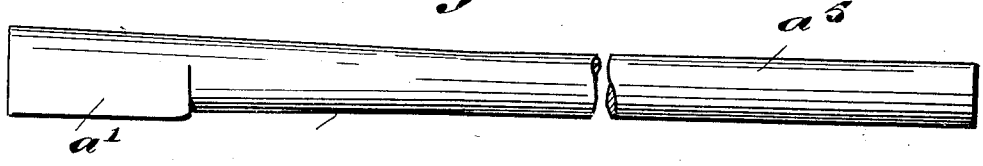


Fig. 6.

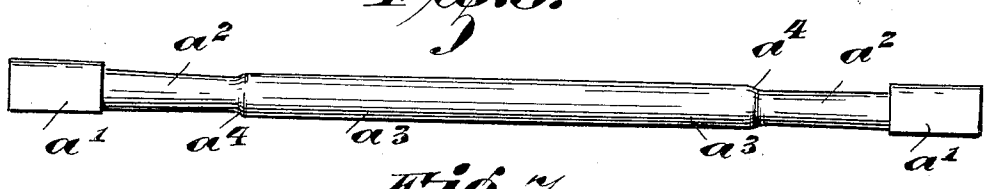
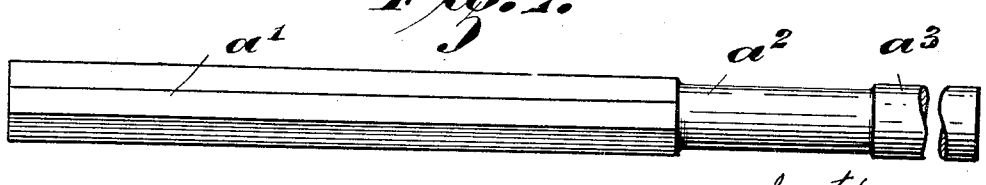


Fig. 7.



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MANUFACTURE OF GUN-BARRELS.

1,316,509. Specification of Letters Patent. Patented Sept. 16, 1919.

Application filed February 21, 1917. Serial No. 150,218.

To all whom it may concern:

Be it known that I, BARON ROSE, a subject of the Kingdom of Great Britain, residing at The Mount, Halesowen, in the county of Worcester, England, manufacturer, have invented certain new and useful Improvements in the Manufacture of Gun-Barrels, of which the following is a specification.

This invention has relation to gun barrels including those for sporting guns, rifles, air guns, birding and African guns, and comprises a new process of manufacture whereby a substantial saving of metal is effected by reason of the reduction of the large amount of scrap which is rendered necessary by the existing process in which the exterior of the barrel is turned or ground down to the required diameter and thickness of metal, while at the same time a further saving of scrap is effected in connection with the forming of the bore, the present improvements consisting of means whereby the barrel is formed from a rod or tube by being drawn through a split or two-part die on a mandrel to the required diameter and thickness.

In order that this invention may be clearly understood and easily carried into practice, reference may be had to the appended sheet of explanatory drawings, upon which:—

Figure 1 is an elevation of the initial solid rod or tubular billet from which a barrel is manufactured by this process.

Fig. 2 is a similar elevation illustrating the billet after the usual enlargement at the end near the breech has been formed and the adjacent part of the billet reduced in diameter to fit in the split die.

Fig. 3 is a similar elevation to Fig. 2, but showing the reduced neck ready for receiving the split dies.

Fig. 4 is a longitudinal section through Fig. 3.

Fig. 5 is an elevation of the barrel after the process of drawing has been effected.

Fig. 6 is an elevation of a billet illustrating the method of manufacturing two barrels from the one billet.

Fig. 7 is an elevation of a billet with modified form of barrel in which a length of the barrel at the breech end is formed to an octagonal cross sectional shape.

In an embodiment of the process of manufacture and referring to the type of barrel used for sporting guns, the solid rod or tubular billet a from which the barrel is to be drawn is in the case of the rods forged, rolled or otherwise formed, and in the case of the tubes hot rolled or cold drawn to a diameter which is larger than the exterior diameter which the barrel requires to be when finished, such solid rod or tubular billet being also in its length substantially shorter than the length of the barrel when completed, and having swaged, forged or otherwise formed at its breech end the usual enlargement a^1.

In the case of billets a of tubular formation the internal diameter of the tube is preferably larger than the required internal diameter of the barrel, which internal diameter is reduced at those parts of the billet which form the breech enlargement and the hereafter described reduced neck, such reduction of the internal diameter being effected in the course of the process of forming such enlargement and neck.

The billets whether of solid rod or tubular formation may be of sufficient length from which to form two barrels, in which case the enlargement a^1 and reduced neck a^2 is provided at both ends of the billet as illustrated in Fig. 6.

A portion of the exterior metal at a^2 adjacent the enlargement is swaged, forged or / and turned down on the lathe so as to effect the reduction of the external diameter to the diameter and thickness of metal required for the finished exterior of the barrel at this point, such reduced portion or neck a^2 being of a width suitable for accommodating the dies for effecting the drawing down process, after which in the case of a solid rod the billet is drilled along its length to form the bore.

The dies are formed in two or more parts so as to be capable of being assembled and positioned around the reduced portion a^2 of the billet before being secured in the die holder, the billet being provided with an internal mandrel or bar and then drawn through the dies so as to reduce the external diameter of the part a^3 of the tubular billet with a corresponding extension in the length, which process of drawing is repeated

with split dies having reduced apertures until the diameter of that part a^3 of the tubular billet is reduced to the same diameter as the diameter of the recessed neck a^2 and the length of the tubular billet extended along the mandrel to the required length of the barrel as illustrated by a^5 Fig. 5.

In the case of the process by which two barrels are drawn from the same billet, the barrels are divided by being cut laterally through at the center of the length.

In the case of that type of barrel having the enlarged portion a^1 of its length at the breech end of octagonal or other such external cross sectional shape as shown in Fig. 7, the hollow billet or tube may be formed as previously described, and the octagonal portion may be drawn through dies, the reduced portion or neck a^2 being formed at the junction of the octagonal section with the circular section, after which that part a^3 of the tube of circular section is drawn through the split dies in the manner previously described.

The shoulder a^4 of the reduced neck which is drawn through the dies is formed to an inclination, so that in the initial processes of drawing, the tubular billet is caused to take a central course through those dies the apertures of which are larger than the reduced neck a^2 of the billet.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The improvement in the manufacture of gun barrels, characterized by first reducing the external diameter of the billet at a point adjacent to, or near to the breech enlargement, then inserting such reduced part in a die which is diametrically split to allow of a portion of the die to be removed for the insertion of the reduced part, after which the loose part of the die is replaced, and that part of the billet other than the breech enlargement drawn through the die until the barrel is drawn to the required diameter and length, substantially as set forth.

2. The improvement in the manufacture of gun barrels consisting in first reducing the external diameter of the billet at a point spaced from one end to leave a larger diameter breech part; inserting said reduced portion in a die and then drawing the billet through the die until that part of the barrel between the larger diameter breech part and the muzzle is drawn to the required diameter and length.

In testimony whereof I affix my signature in presence of two witnesses.

BARON ROSE.

Witnesses:
ARTHUR H. BROWN,
HOLLIS F. BROWN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."