

# UNITED STATES PATENT OFFICE.

JAMES THOMPSON, OF BILSTON, ENGLAND.

IMPROVED PROCESS OF MAKING GUN-BARRELS, &c., FROM BESSEMER STEEL.

Specification forming part of Letters Patent No. 51,281, dated November 28, 1865.

*To all whom it may concern:*

Be it known that I, JAMES THOMPSON, of Bilston, in the county of Stafford, England, manufacturer, have invented certain new and useful Improvements in the Manufacture of Gun-Barrels and Ordnance, and other like Tubular Bodies; and I do hereby declare that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known, and of the usual manner of making, modifying, and using the same.

My improvements consist in the application of the homogeneous metal well known in England, the Continent of Europe, as well as in the United States of America, as "Bessemer's steel" to the manufacture of gun-barrels and ordnance, and which said application I purpose extending to the manufacture of other like tubular bodies, such as axle-boxes, hydraulic cylinders, and other like purposes where great strength and solidity are required.

In carrying my invention into effect I take certain quantities of the said metal in a heated condition, either from a block, ingot, or otherwise, according to the size of the gun barrel or barrels, ordnance, or other like tubular bodies required to be made, or for the more convenience of handling or appliances at the use of the operator. Such piece or lump of homogeneous metal I swage, hammer, tilt, roll, or otherwise work and elongate into a solid bar, bloom, or block, such operations being not only essential to the solidifying and improving the condition of the said metal and rendering it fit for the purposes herein stated, but also to reduce it to the desired shape and size, which may be effected by the operations herein stated or by any other suitable equivalent appliances worked by steam, water, or otherwise.

If such homogeneous metal be intended for gun-barrels, I may proceed to divide it up into such quantities as may make two or more barrels, or into lumps for single barrels, punching, piercing, drilling, or otherwise perforating the said lumps by displacing the metal concentrically through the mass, which may be effected in the manner described in a patent granted to me on the 10th of May, 1864, No. 42,718, or by such or similar equivalent means; but in practice I have found that, instead of fix-

ing the punch in the movable piston-rod, the lower or face end of the said piston-rod may be faced as an ordinary stamp-hammer; and the punch for displacing the said metal may be held concentrically on such metal intended to be perforated by the hand or otherwise of the operator, and by a few rapidly-repeated blows imparted by the apparatus described in the specification hereinbefore referred to, or other equivalent means, the metal will be readily displaced, and a hole thereby made or formed through the mass, which may be for one, two, or more barrels, whether external support be used or not during the time of such operation, as experience has taught me that such external pressure or support may be dispensed with without liability of injury to the works produced; and, again, while using such metal the hole may be formed by the process of drilling—not that I recommend it, as it is a slow and tedious operation.

After such operation of punching, piercing, drilling, or perforating has been performed, I proceed, as described in my former patent, to re-heat and apply a mandrel for internal support through the perforation, and again tilt, swage, roll, reduce, or otherwise elongate the said metal under operation, which, if of sufficient quantity for one gun-barrel, will then assume the form technically called a "gun-mold;" but if for two or more, the mass being divided, will form two or more gun-molds, according to the quantity under operation. From this condition the said mold or molds can be further operated on by rolling, (as particularly described in my former patent, hereinbefore referred to,) hammering, swaging, or other equivalent means, separately or combined, to draw out and elongate the said mold or molds to the length and size required, and with or without lumps left on them, as may be desired, using an internal mandrel or support for solidifying the metal as progressively operated on, such operations being varied according to the skill, taste, or appliances of the operator.

From the foregoing description it will be seen that in manufacturing ordnance or other like tubular bodies from the said homogeneous metal the same means and appliances, or their equivalents, as herein described, for the manufacture of gun-barrels would be applica-

ble, varying the size or strength of the same according to the description of ordnance or other like tubular body required to be made.

Having thus given a somewhat full description of what my invention consists, I will further observe that I do not purpose wasting a particle of this description of metal in my operations, as by taking the scrap or small pieces, otherwise of little value, made by workers in general of this metal, as well as from my own operations, and remelting and casting them into a solid or hollow block or ingot, such metal will be found improved by the operations to which it had before been subjected, and may be economically worked into gun-barrels, ordnance, or other like tubular bodies (with the facilities as hereinbefore described) as if I had commenced operations on lumps of homogeneous metal first poured into ingots or otherwise formed into lumps from the furnace or refinery; nor do I purpose confining myself to any particular mode, means, or appliances for reducing the said metal into seamless gun-molds, ordnance, or other tubular bodies, nor to the means and appliances for re-

ducing the said molds or partly formed ordnance or other tubular bodies down to near the finished shape, as the same may be otherwise performed without affecting the spirit and object of my invention; nor do I claim the making of gun-barrels, ordnance, or other tubular bodies of steel, as that of itself is old, and has been attempted in various ways with more or less success; and I may further add that gun-barrels have been made of solid bars of steel converted and finished on the Bessemer principle, the solid bar being reduced down to the external shape of a finished gun-barrel and then drilled; but

What I claim as new and of my invention is—

The making of seamless gun-barrels, ordnance, or other like tubular bodies of Bessemer's homogeneous metal or steel, in the manner herein described.

JAMES THOMPSON.

Witnesses:

JAMES S. COCKINGS,  
WILLIAM LOACH.