J. Y. SMITH.

Ribbed Metallic Bar.

No. 54,786.

Patented May 15, 1866.

Fig. 1

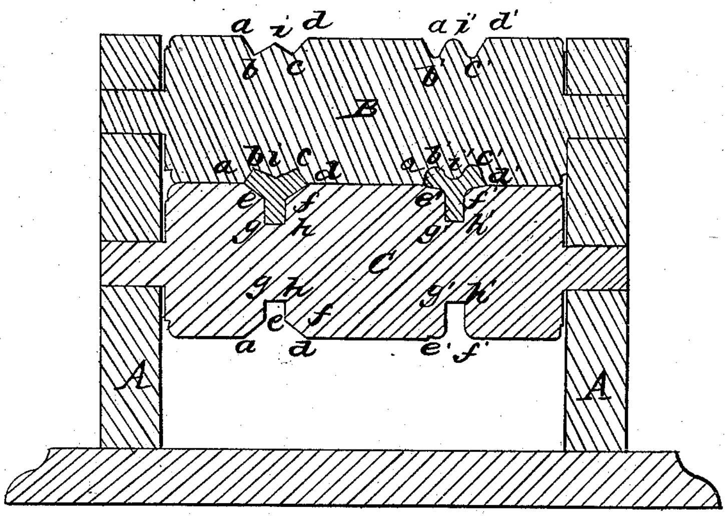


Fig. 2

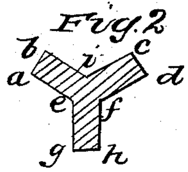
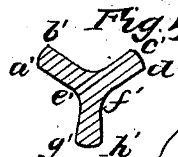


Fig. 3

Fig. 4



INVENTOR

J. Y. Smith

by his atty

WITNESSES

UNITED STATES PATENT OFFICE.

JOHN Y. SMITH, OF ALEXANDRIA, VIRGINIA, ASSIGNOR TO HIMSELF AND HERMAN HAUPT, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TRIPLE-RIBBED METALLIC BARS.

Specification forming part of Letters Patent No. **54,786**, dated May 15, 1866.

To all whom it may concern:

Be it known that I, JOHN Y. SMITH, of Alexandria, in the county of Alexandria and State of Virginia, have invented certain new and useful Improvements in the Manufacture of Bars of Iron or other Metal, being of a new sectional form or shape, whereby it is peculiarly adapted and applicable in certain arts; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of the die-sunk rollers for the manufacture of a bar shaped in accordance with this my invention. Figs. 2, 3, 4 are cross-sections of different patterns or forms of the bar which I call the "triple-ribbed" bar.

The object of my invention is to produce a bar of iron, steel, or other metal which, for the same weight of metal, is stronger and of greater stiffness than the bar of ordinary construction and form, and which, owing to its form, has a larger field of applications and is peculiarly adapted to various purposes in the arts. Thus, for the manufacture of triple-bitted boring or drilling tools according to an invention of mine for which Letters Patent of the United States were issued on the 23d May, 1865, and for other purposes hereinafter mentioned, this form of bar is of great utility.

I accomplish this object by constructing the bar of metal, with three projections or ribs, varying in thickness or in width, as circumstances may require, which ribs radiate from a common center, each supporting and strengthening the others.

This bar is manufactured by passing the metal through die-sunk rollers or under die-sunk hammers in the manner well-known to manufacturers of iron.

The dies in the rollers or hammers, of course, are shaped to admit of the proper delivery of the bar, the surfaces of the ribs of which may either be convex or concave, according to the purpose for which it is intended.

To enable others to make and use my invention, I shall now describe the manner in which a bar with three concave-sided ribs may be made.

In the drawings, A is the frame in which the rolls B C are mounted. These rolls, which may be the last of the finishing set, are grooved to give the bar its final shape. To this effect the rolls B and C are grooved to first make a triple-ribbed bar with the ribs plane-faced, as at Fig. 2, the groove in the upper roll being shaped in conformity with the broken line *a b i c d*, the angles at *b* and *c* being ninety degrees, and that at *i* one hundred and twenty degrees, while the lower roll is grooved according to the line *a e g h f d*, the angles at *e* and *f* being each one hundred and twenty degrees, while those at *g* and *h* are ninety degrees each.

The iron having been rolled to assume the form shown in Fig. 2, it may be used in this form, or it may be further modified by finishing it under the rolls grooved so as to give the ribs concave sides. To this effect the groove in the upper roll is shaped in conformity with the outline *a' b' i' c' d'* in Fig. 4, which is the ultimate form of the side of the bar facing this roll. The groove in the lower roll is preserved right-angular at the corners *g'* and *h'*, while the corners at *e'* and *f'* are slightly curved, so as to approach the form to be given the bar, without, however, interfering with the proper delivery of the bar.

To finish the bar by means of a roll grooved as described, it is necessary, after running the bar through the rolls, to turn it so as to bring the lower rib—*i. e.*, the rib which shall have been run in the lower groove—into the groove of the upper roll. Thus, by running the bar through the rolls two or three times, each time changing its position with respect to the grooves, the bar will be finished.

The bar constructed as above described can be applied with advantage to many uses. When made of steel and of proper size it is especially adapted for rock-drills, reamers, and light boring-tools. When of smaller diameter it can be used advantageously in place of the rake-teeth now in use, as it combines more strength and elasticity with lightness or less material. Still smaller in diameter, and either twisted or straight, it may be used as a lightning-rod, possessing more rigidity and strength than rods now used; and, generally,

this bar can be employed in every connection in which the ordinary bar is now used.

Having thus described my said invention, and the manner in which the same is or may be carried into effect, I claim—

The manufacture of the metallic triple-ribbed bar in the manner and by the means substantially as herein described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

J. Y. SMITH.

Witnesses:
EDM. F. BROWN,
JOS. L. COOMBS.