

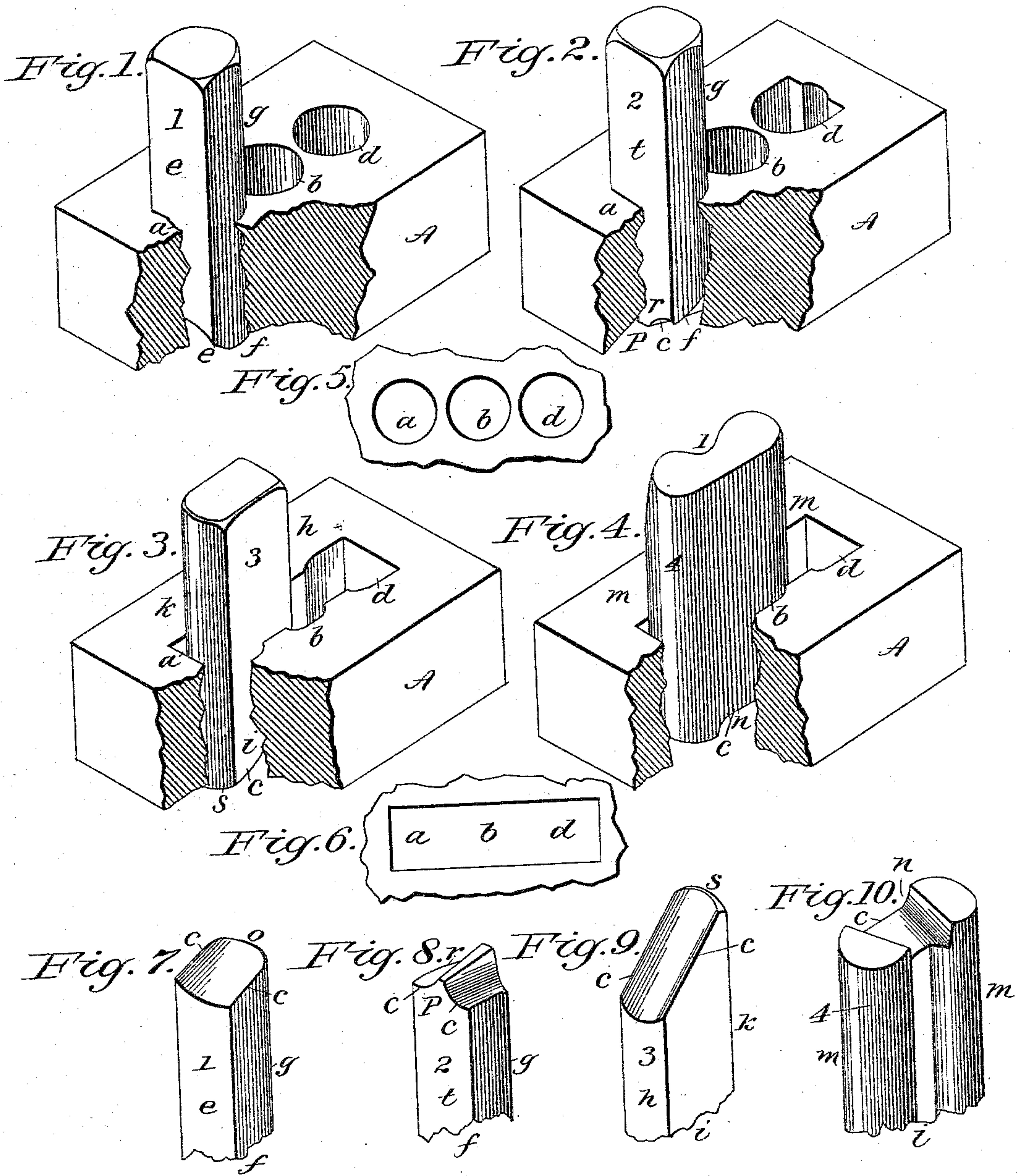
(Model.)

T. RYAN.

TOOL FOR MORTISING METALS.

Patented July 10, 1883.

No. 280,866.



Witnesses.
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UNITED STATES PATENT OFFICE.

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TOOL FOR MORTISING METALS.

SPECIFICATION forming part of Letters Patent No. 280,866, dated July 10, 1883.

Application filed May 1, 1882. (Model.)

To all whom it may concern:

Be it known that I, THOMAS RYAN, a citizen of Brantford, Canada, and a resident of Syracuse, county of Onondaga, and State of New York, have invented a certain new and useful Improvement in Tools for Mortising Steel, Iron, Brass, and other Metals; and I declare the following to be a full and complete description of the same, so as to enable any person skilled in the art to which it appertains to make and use the same.

Heretofore mortising has been done with the hammer and cold-chisel, which method is objectionable in both small and large work because of the time consumed in cutting, and because of the difficulty in guiding the chisel to cut the mortise true at the sides and ends.

The object of my invention is to provide a set of tools by which steel, iron, and other metals can be mortised and the ends cut square or left round, as desired, and the stock cut at the sides and the surface left uniform, and all in an expeditious and simple manner.

The invention consists of a set of steel tools a little smaller in size than the drill used in boring, to readily follow in the drill-hole and give clearance enough for the tool to come freely through, the form and peculiarities of which will hereinafter fully appear.

In the accompanying drawings, Figure 1 shows a block of metal, with holes *a b d*, the corner being broken off to show the tool No. 1 as driven in the hole *a*. Fig. 2 shows the same block of metal with the tool No. 2 driven in the hole *a*, the hole *d* exhibiting the end of the mortise as cut square at the corners by No. 1 tool. Fig. 3 is the same block of metal, showing tool No. 3 as driven in the hole *a* to cut the stock between *a* and *b*, the stock being also cut out between *b* and *d*. Fig. 4 is the same block, showing the tool No. 4 as used in cutting out the balance of the stock between *a* and *b* on one side. Fig. 5 shows the block as bored out, and Fig. 6 the mortise as completed by the tools. Figs. 7 to 10 are perspectives of the different tools.

The tool No. 1 has the front surface, *e*, flat, the sides *f* partly rounded off toward the back, the back *g* round, the head *o* furrowed out, the cutting-edges *c c*, at the end of the flat surface of the sides, slightly swelling, gradually incline from the front toward the back, while

the head *o* at the back *g* is slightly beveled, to facilitate the guiding the tool when driven through the hole in the metal.

The tool No. 2 has the front side, *t*, flat, and the back side, *g*, formed like the tool No. 1. In the center of the head *r* is a tongue, *p*, protruding nearly an eighth of an inch beyond the cutting-edges *c c*, while these edges are a little concave, and each inclines gradually from near the center of the tongue to the sides. The head of the tool, back of the sharp edges *c c*, is cut away, and the surface each side of the tongue inclines to the back *g*.

The tool No. 3 has a round back, *k*, and plane sides *i*, with the front *h* slightly rounded. The cutting-edges *c c* extend nearly diagonally across each side, with the incline from the back *k* to the front *h*, while the head *s*, between the sides, is well furrowed out, and the point of the head, at the back *k*, is slightly beveled off to facilitate guiding.

The tool No. 4 has the front surface, *n*, plane above the cutting-edge *c*, while the rest of the front and sides *m* are round. The back *l* is furrowed out to give clearance for the stock directly opposite that which the tool is cutting. The sides *m* and that portion of the front and rear of the tool each side of the cutting-edge *c* extend below the edge about an eighth of an inch, to facilitate the guiding; the head of the tool, back of the edge, inclining toward the back *l*, which is well furrowed out.

In the metal drilled as shown in Fig. 5, the head *o* of the tool No. 1 is placed in the hole *a*, with the front *e* toward the outside, (see Fig. 1,) and with a hammer or press it is driven through the hole, cutting out the stock from the corners, except about a sixteenth of an inch, leaving the corners square. Withdrawing tool No. 1, No. 2 is put in its place, and the remainder of the stock is cut out, leaving the end of the mortise perfectly square. (See Fig. 2.) The tongue *p* of tool No. 2, preceding the cutting-edges, aids in guiding the tool, and prevents it from cutting into the stock. Tool No. 3 is then placed in the hole *a*, the back *k* being against the square end of the mortise, and the stock between *a* and *b* is largely cut out. (See Fig. 3.) Then tool No. 4 is used to cut out the stock remaining between *a* and *b*, the front *n* being toward the stock, and the sides following in the holes *a* and *b*, while the

furrow in the back *l* receives the uncut stock opposite, thus permitting the tool to be driven through. In guiding these tools an ordinary hand-wrench may be used. The tools Nos. 3 and 4 I use double in light work, and also in heavy work when a press is used. It is obvious that tools Nos. 3 and 4 may be used with square or cornered backs; but the round backs are preferable, as the tools both guide easier and do better work. It is also obvious that the cuttings fall freely in front of the tools. These tools taper a little from the head down, to facilitate clearance. They are tempered at each end, and hence do not burr up when driven. They may be sharpened upon a small emery-wheel.

Having thus fully described my invention, what I claim is—

1. In mortising metals, to cut the corners of the drill-hole square to aid in making the end of the mortise square, the mortising-tool No. 1, provided with a plane front, *e*, partly-rounded sides *f*, round back *g*, and the head *o*, having cutting-edges *c c*, and being hollowed out to allow the cuttings to fall freely, and being slightly beveled off at the back *g*, to facilitate the guiding, as shown, and for the purposes specified.

2. In mortising metals, to cut out the stock remaining after the corners are cut square to make the end of the mortise square, the mortising-tool No. 2, provided with a plane front, *t*, partly-rounded sides *f*, round back *g*, and the head *r*, having cutting-edges *c c*, and being provided with protruding tongue *p*, to prevent cutting into the body of the stock and

aid in guiding, and being cut out each side of the tongue to allow the cuttings to freely fall, as shown and for the purposes specified.

3. In mortising metals, to cut out a large portion of the stock between the drill-holes, the mortising-tool No. 3, having a rounding front, *h*, plane sides *i*, and the head *s*, provided with diagonal cutting-edges, inclining from the front *h* to the back *k*, and being furrowed out to allow the cuttings to fall, as shown, and for the purposes specified.

4. In mortising metals, the mortising-tool No. 4, to cut out the remaining stock and render the sides of the mortise true and smooth, with plane front *n*, and rounded sides *m*, the back being well furrowed out to give clearance for the partially-cut stock, the sides *m* extending below the cutting-edge *c* to facilitate guiding, having the head of the tool back of the cutting-edge *c* cut out and inclined to allow the cuttings to freely fall, as shown, and for the purposes specified.

5. In mortising metals, the series of mortising-tools Nos. 1 2 3 4, constructed as described, to cut the ends of the mortise square and cut out the intervening stock, leaving the sides of the mortise true and smooth, as shown, and for the purposes specified.

In witness whereof I have hereunto set my hand this 15th day of April, 1882.

THOMAS RYAN.

In presence of—

HOMER WESTON,
T. L. R. MORGAN.