

ROBERT J. MULLEN.

Improvement in Punches.

No. 120,162.

Patented Oct. 24, 1871.

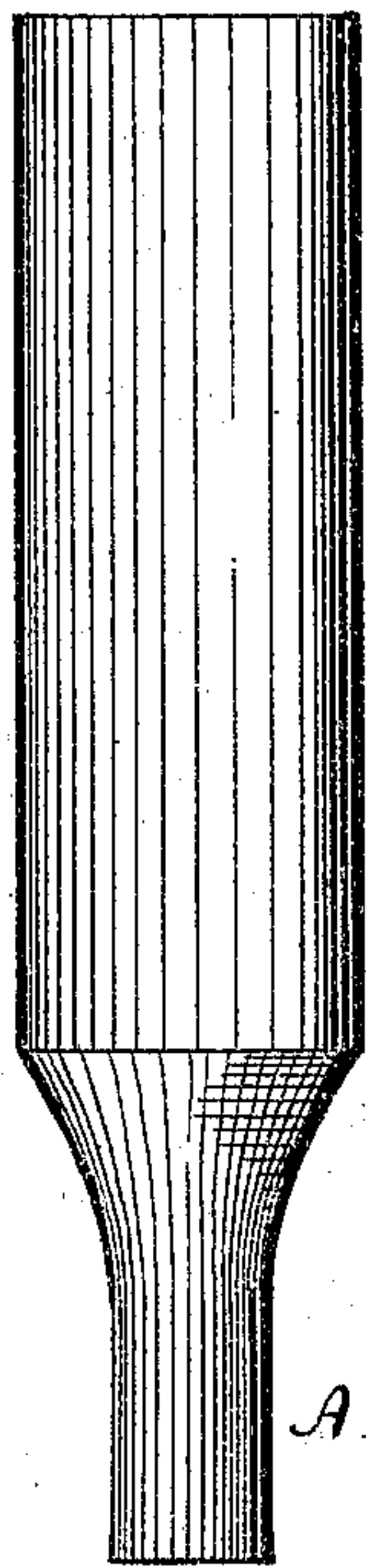


FIG. 1.



FIG. 3.

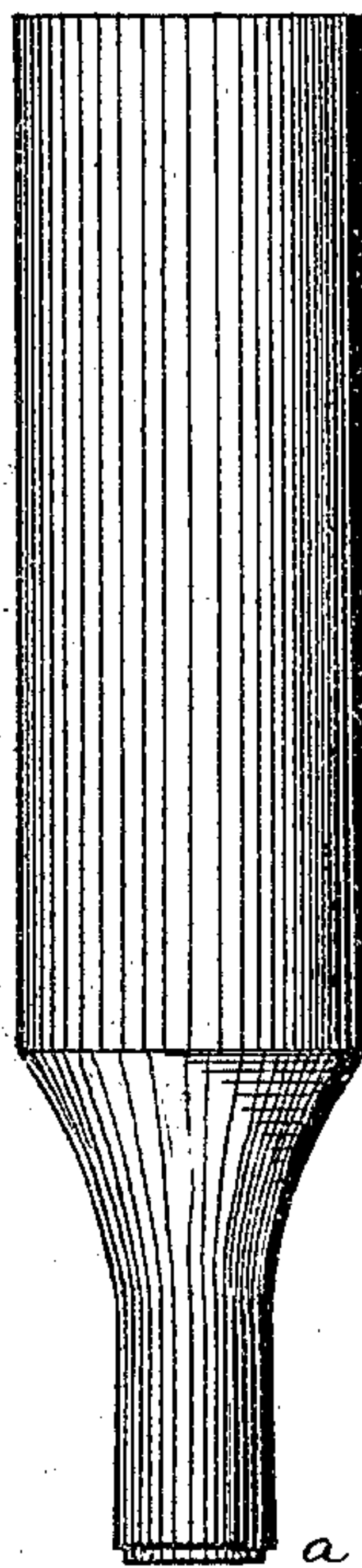


FIG. 2.



FIG. 4.

WITNESSES

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# UNITED STATES PATENT OFFICE.

ROBERT J. MULLEN, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE PROVIDENCE TOOL COMPANY, OF SAME PLACE.

## IMPROVEMENT IN PUNCHES.

Specification forming part of Letters Patent No. 120,162, dated October 24, 1871.

*To all whom it may concern:*

Be it known that I, ROBERT J. MULLEN, of the city and county of Providence, in the State of Rhode Island, have invented a new and useful Improvement in Punches; and I do hereby declare that the following specification, taken in connection with the drawing making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is a view in perspective of the common punch in use. Fig. 2 is a view of my improved punch. Fig. 3 is a sectional view of a bar of iron, through which a hole has been punched with the common punch, Fig. 1. Fig. 4 is a sectional view of another bar of iron, through which a hole has been punched with my improved punch, shown at Fig. 2.

In the operation of cold punching, where a punch like that shown at Fig. 1 is forced through a thick bar of metal, as, for instance, in the manufacture of nut-blanks, the sides of the hole exhibit a ragged surface from the tearing action of the punch in forcing through the bar. When a nut with a full sharp thread is required such blanks require to have their holes reamed smooth before they are suitable to yield a full thread, and a considerable increase in the cost of manufacture is thereby occasioned.

My invention resides in an improvement in the construction of the punch, which enables a perfectly-smooth hole to be made therewith and without subjecting the blank to any operation additional to that of punching. It consists in forming the end of the punch A, as seen at Fig. 1, with a cutting-shoulder, *a*, shown at Fig. 2, which is produced by simply reducing the diameter of what would otherwise be the acting end of the punch to the extent of about one-sixteenth of an inch by turning the same down with a suitable tool for the distance of one-sixteenth of an inch or so from the end to form the sharp shoulder *a*.

There is thus formed a punch proper, B, and a supplemental punch or cutter, *a*. The former acts, after the tool has been hardened and tempered, to crowd the metal before it, and would leave the hole as ragged as results from the use of the common punch A, Fig. 1, were it not that the annular cutting or punching-shoulder *a* follows in close proximity to it and acts to remove the metal of the bar surrounding the portion of the hole then made, while such metal is supported and its fiber prevented from tearing away by the side of the punch B. Thus a punch so constructed performs a function different from that which would be performed by two punches, of the sizes of B and *a*, respectively, acting separately and independently.

The advantage of the improvement is that a smooth hole, fit when tapped to give a full screw-thread, can be obtained in a bar at no more cost than the ragged hole resulting from the common punch, and that, so long as the metal of the bar possesses the requisite strength of fiber, it is not necessary that it should be of so fine a grain as that heretofore employed in the nut manufacture to produce an equally good article for the purpose for which it is used.

I am aware that a flat or rectangular punch with step-like supplementary cutting-shoulders formed on one of its sides is not new, and I do not embrace such in my claim.

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

That improvement in punches which consists in combining the supplemental cutting-shoulders *a*, which extend entirely around the punch, with the punch proper B, as described, for the purposes set forth.

ROBERT J. MULLEN.

Witnesses:

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(119)