(No Model.)

H. R. TILLISON.

REAMER.

No. 338,318. Patented Mar. 23, 1886.

Fig. 1

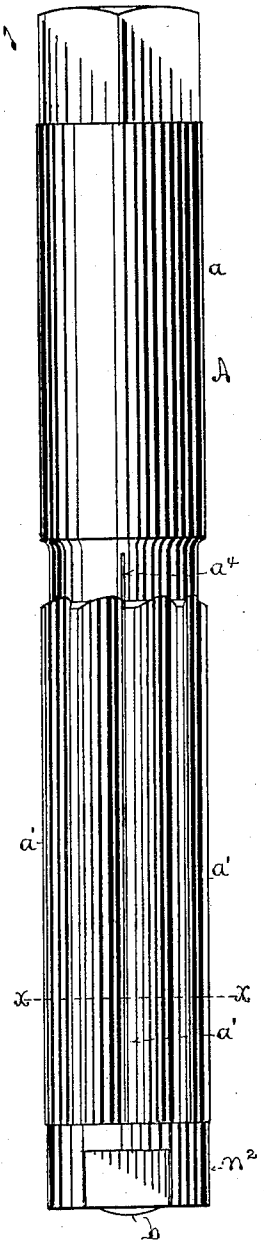


Fig. 2

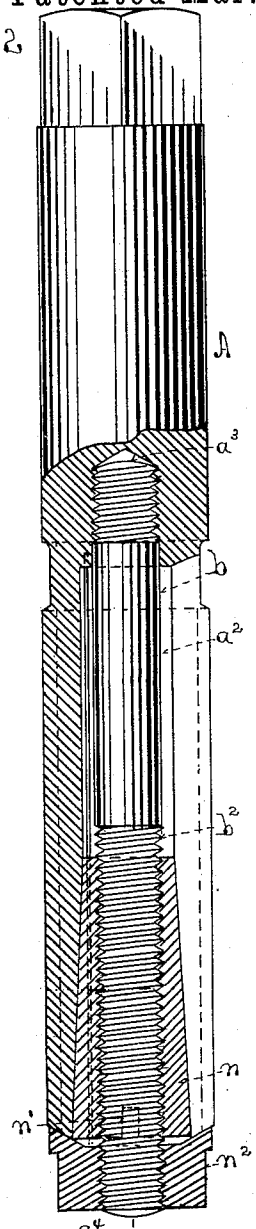
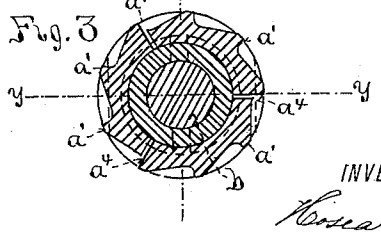


Fig. 3



WITNESSES:

V. P. Ockington.

D. F. Simpson

INVENTOR

Rosea R. Tillison

BY

David Hall Rice

ATTORNEY

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

HOSEA R. TILLISON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE S. A. WOODS MACHINE COMPANY, OF SAME PLACE.

REAMER.

SPECIFICATION forming part of Letters Patent No. 338,318, dated March 23, 1886.

Application filed November 23, 1885. Serial No. 183,667. (No model.)

To all whom it may concern:

Be it known that I, HOSEA R. TILLISON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Reamers, of which the following is a specification.

My invention relates to reamers for reaming or enlarging holes in metal or other substances where similar tools are used; and it consists in certain improved combinations of parts, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a side view of a reamer constructed according to my improvement. Fig. 2 is a similar view of the same, partly in section, on the line *y y* of Fig. 3, to show the construction of the internal mechanism. Fig. 3 is a section of the completed reamer on the line *x x* of Fig. 1.

A is the reamer, made in the ordinary way, with a smooth barrel or gage part, *a*, and a portion having cutters *a' a'*, formed upon it by grooving out the metal longitudinally in the usual manner. In the portion of the reamer upon which these cutters are formed is bored from that end of the tool an axial hole, a^2, extending inward to the barrel portion *a*. At the bottom of this hole a smaller hole, a^3, is continued into the barrel portion and tapped out with a screw-thread. A rod, *b*, is provided with a screw-thread upon its end, fitting the hole a^3, and is of less diameter than the hole a^2, and is inserted so that its other end projects beyond the end of the reamer, substantially as described, and the other end is provided with a screw-thread, b^2, extending downward a considerable distance into the bore a^2. At the mouth end this bore a^2 is made funnel-shaped, as shown, and the shell of the reamer around this bore is slotted through into it longitudinally with three slots, a^4, extending from the end the entire length of the cutters formed upon it, and equidistant from each other around its periphery. A nut, *n*, made to fit the screw-thread b^2, is formed with its outside tapering or conical, to fit the funnel-shaped portion of the bore a^2, and is screwed upon the rod *b* until it enters the bore and fits against the funnel-shaped portion. This nut *n* has on opposite sides slots *n'*, (shown in dotted lines in Fig. 2,) into which a spanner may be inserted from the outer end to turn it on the rod *b*.

The end of the shell of the reamer around the bore a^2 is beveled off on its outer corner all around, as shown in Fig. 2, and another nut, n^2, having a surface beveled inward to fit this bevel of the reamer end is screwed upon the rod *b* at its outer end until it comes down upon the end of the reamer, thus causing each separate division of the cutters between the slots a^4 to be compressed tightly upon the nut *n*, and also forming a neat cap which prevents the nut *n* from being accidentally moved or displaced.

The purpose of my invention is to restore the diameter of the reamer after it has been worn at the outer end, because, as is well known, the greatest wear upon the reamer occurs at and near the end of the cutters where they first enter the metal to be cut, and this wear requires that the entire length of the cutters shall be ground off to restore the proper bevel to them, even in cases where the entire cutter is expanded by some mechanism which moves outward both ends of it evenly.

My invention enables the expansion to be applied to the ends of the cutters where the greatest wear occurs in a greater or less degree in proportion to the amount of wear, and thereby I have much less grinding of the cutters to do in sharpening them again. For instance, suppose the reamer shown in Fig. 1 has its cutters considerably worn from the end up to the line *x x*, while farther toward the middle of the reamer they are scarcely worn at all. By removing the nut n^2 and screwing inward the nut *n* a proper distance I spring outward the cutters *a'* at their outer ends, while their inner ends remain hardly affected, and I then grind the longitudinal edges of the cutters to the same taper as before they were worn, and so that the reamer shall be of the same diameter as at first throughout its cutting length. In doing this I have to grind off much less from the cutters than if in expanding them they had moved uniformly out throughout their length. I thus obtain a reamer which can be readily and cheaply kept at a

given size for much greater length of time than if made in the ordinary manner.

What I claim as new and of my invention is—

1. The combination, in a reamer, of the shell provided with cutters a', two or more slots, a^4, and bore a^2, with the rod b, provided with screw-thread b^2 and the tapering nut n, substantially as described.

2. The combination, in a reamer, of the shell provided with cutters a', two or more slots, a^4, and bore a^2, with the rod b, provided with screw-thread b^2, the tapering nut n, and the nut n^2, substantially as described.

3. The combination, in a reamer, of the shell provided with cutters a', two or more slots, a^4, and bore a^2, with the rod b, provided with screw-thread b^2, and the tapering nut n, provided with slots n', substantially as described.

4. The combination, in a reamer, of the shell provided with cutters a', two or more slots, a^4, cut entirely through said shell from the open end thereof toward the solid part a, the tapering wedge n, and mechanism adapted for forcing the same into the open end of said reamer-shell and expanding the cutters at that end, while their opposite ends are fixed, substantially as described.

HOSEA R. TILLISON.

Witnesses:

N. P. OCKINGTON,

DAVID HALL RICE.