(No Model.)

W. CRABB.

METHOD OF MAKING COTTON PICKER TEETH.

No. 345,772. Patented July 20, 1886.

Fig. 1.

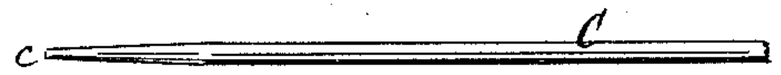


Fig. 2.

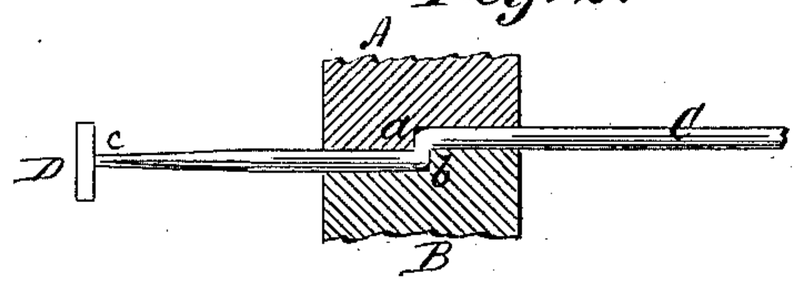


Fig. 3.

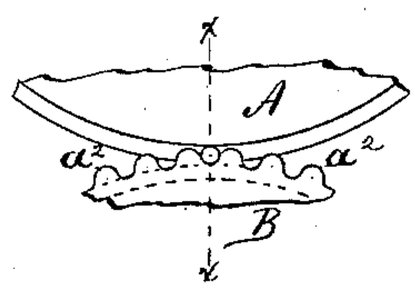


Fig. 5.

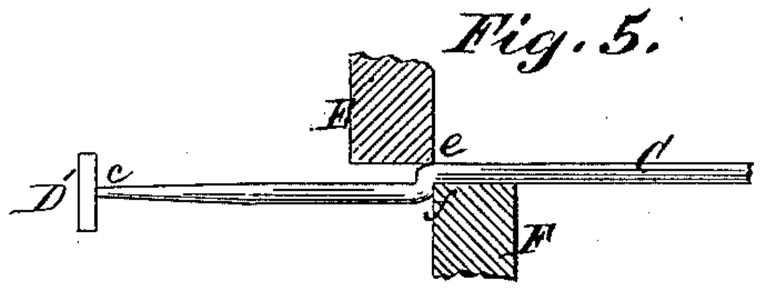


Fig. 4.

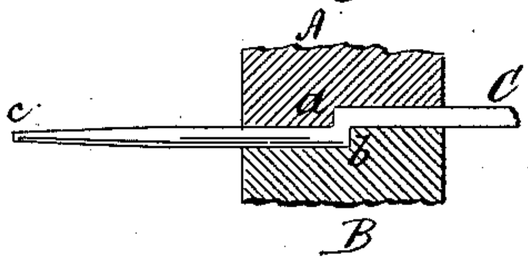


Fig. 6.

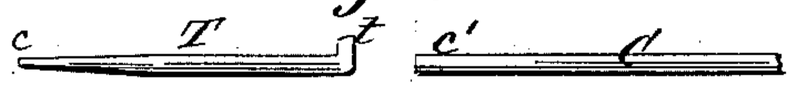


Fig. 7.

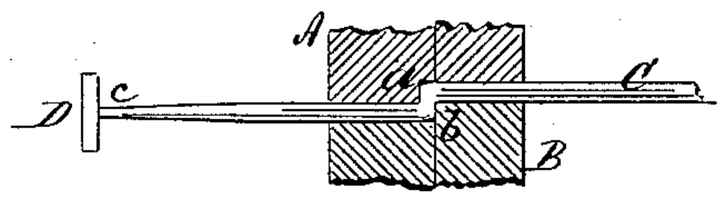
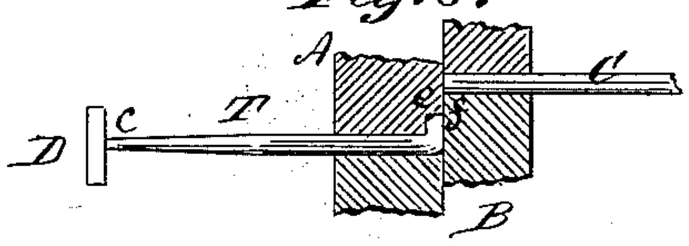


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM CRABB, OF NEWARK, NEW JERSEY.

METHOD OF MAKING COTTON-PICKER TEETH.

SPECIFICATION forming part of Letters Patent No. 345,772, dated July 20, 1886.

Application filed October 22, 1885. Serial No. 180,560. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CRABB, a citizen of the United States, residing in the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Processes of Making Teeth for Treating Fibrous Substances, of which the following is a specification.

My improvements relate to the class of metal teeth which are designed for use upon picker and similar cylinders, and more especially to those which are made from cylindrical wire, and are driven into and through the wooden coverings or sections of such cylinders. Such teeth have heretofore been made from cylindrical wire blanks tapered at one end and having the other end upset to form a head or shoulder, similar to a wire nail, for the purpose of preventing their working through the wood; but such teeth, owing to the cylindrical form of their shanks, are liable to twist in their sockets and become loose during use, the upset head, while effectually counteracting and preventing any displacement longitudinally, owing to its radial projection upon all sides of the shank, still affording no adequate resistance against the turning of the shank upon its longitudinal axis. In practice these teeth become worn and slightly bent backward under the resistance encountered in their work, and it is customary to reverse the motion of the cylinder for the purpose of counteracting this tendency and preserving their strict radial projection as far as possible. Under these conditions, it will be readily seen that the teeth that are loose within their sockets will turn and adapt themselves to their old position with relation to the line of motion of the cylinder, so that they will become unduly bent and worn upon one side only. It is obvious that a cylinder in which a number of these teeth become thus unduly bent and loose is not adapted to properly act upon the material under treatment, and these objectionable features have become a serious obstacle to the use of cylindrical wire teeth, which would otherwise be the most desirable form for this class of work. Another serious objection to the headed tooth mentioned is that the process of upsetting the metal to form the heads renders the teeth of indefinite and uneven length, the amount of metal so displaced being variable. This is a serious obstacle in use, since the material under treatment is rendered uneven and "lumpy."

Heretofore no adequate provision has been made for preventing the lateral turning of single cylindrical wire teeth, although I am aware that double-U teeth have been formed of wire.

The object of my process is to obtain a cheap and durable tooth in which these objectionable features are counteracted and avoided, the teeth being all of a uniform and prescribed length, and being incapable of turning laterally upon their longitudinal axes when driven into position in the wooden sections.

My invention consists in forming a tooth from a wire blank of any desired length by first tapering one end by grinding in the usual manner, or by any other suitable means, then forming an offset or crimp in the wire blank at a prescribed distance from the said tapered end by means of suitable dies, and, finally, by suitable means severing the section of wire thus offset from the blank in such manner as to cause the offset to constitute a laterally-projecting shoulder or head to the tooth thus formed, while the new end of the wire blank thus created is left smooth, round, and even, so that it is in condition to be in turn tapered by grinding, or by other means without further preparation. The process may thus be carried on continuously until the wire blank is too short for convenient handling while forming the taper. The convenience with which the comparatively long blanks may be handled greatly facilitates and cheapens the process, and the avoidance of all necessity for preparing the new end of the blank before proceeding to taper for the next tooth is also of much importance in a similar respect.

The new and improved article produced is a tooth having the usual tapered end, and with a cylindrical shank from one side of the lower extremity of which projects a lateral toe or shoulder, which latter, when driven into and embedded in the under side of the wooden section-piece, effectually prevents all turning and twisting of the shank of the tooth therein. I thus not only cheapen and simplify the process of manufacture, but also produce a superior article.

My process may be carried out by the aid of various forms of mechanism; and I do not wish to confine myself to any special construction of apparatus, although the means shown in the accompanying drawings are simple and effective.

In the drawings, Figure 1 represents the tapered end of a blank before the offset or shoulder is formed; Fig. 2, a sectional view of the adjoining portions of two crimping-dies with the blank between them; Fig. 3, a front elevation of adjoining portions of two circular rotating dies with the blank between them; and Fig. 4, a transverse section of the same upon plane of line *x x*, Fig. 3. Fig. 5 is a transverse section of adjoining portions of the shearing-dies. Fig. 6 shows the tooth and the new end of the blank after severance. Fig. 7 is a sectional view of adjoining parts of a compound die which both forms the crimp or shoulder and severs the tooth from the rest of the blank, illustrating the formation of the offset. Fig. 8 is a similar view of the same parts, illustrating the severance of the tooth.

The dies A B may be either of circular rotating form, as indicated in Figs. 3 and 4, or of the usual flat rectangular form, as illustrated in the other views, in which case one or both may be made to reciprocate with relation to each other by any suitable means. Where the circular dies are used, one of them is preferably formed with the corrugations a^2 a^2, between which the blanks rest as they pass through the dies. The wire blank C, having first been tapered by grinding, or in any other suitable way, is passed between the dies A B, with its end *c* resting against a gage plate or surface, D, arranged in suitable position behind the dies. By the rotation or reciprocation of the dies with relation to each other, as the case may be, the blank is crimped or bent at right angles to its longitudinal axis by and between the shoulders *a b*, respectively. When the dies are single, as in Fig. 2, the blank is then removed and inserted between suitable cutting edges or dies, E F, with its end resting against a gage surface or plate, D′, so that the action of the cutting-edges *e f* severs the tooth from the rest of the blank at a point coinciding with the lower side of the shoulder or crimp made by the dies A B, the result being the tooth T, having a radially-projecting shoulder or foot, *t*, and a new cylindrical end, *c′*, upon the remaining portion of the blank, which is in condition to be tapered for the next tooth without further preparation. Where the dies are compound, as in Figs. 7 and 8, the operation is the same, except that both the crimping and severance are effected by a single reciprocation of the parts, both dies being divided vertically, and the sections thus formed having an independent movement one over the other, so that after the crimp in the blank is formed the continued motion of one section severs the tooth from the blank, as illustrated in Fig. 7.

Having thus described means for carrying out my process, I desire to state that what I claim as my invention, and wish to secure by Letters Patent, is—

The process of manufacturing teeth, substantially such as designated, consisting in first tapering the end of the blank, then crimping the blank at a prescribed distance from the said tapered end, and severing the tooth thus formed from the blank close to the crimp in such manner as to leave the latter in the form of a radial shoulder or projection upon the tooth, while the new end of the blank is left straight and cylindrical in form, for the purpose and substantially in the manner described.

WILLIAM CRABB.

Witnesses:
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WM. GARDNER.