(No Model.)

W. CRABB.

TOOTH FOR GILLING AND HACKLING MACHINES.

No. 287,506. Patented Oct. 30, 1883.

Fig. 1.

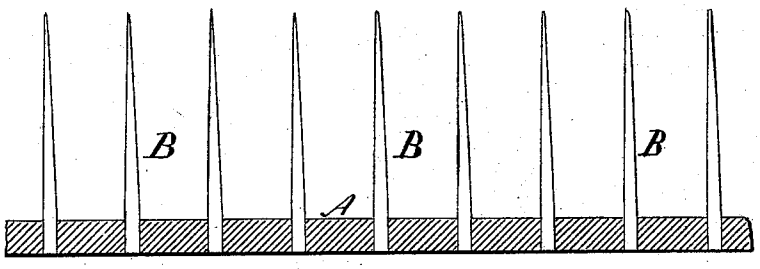


Fig. 2.

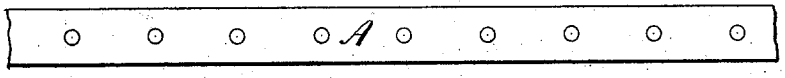


Fig. 3.

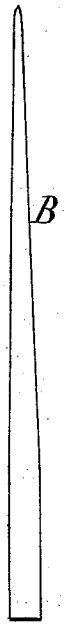


Fig. 8.



Fig. 4.

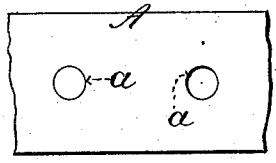


Fig. 5. Fig. 6.

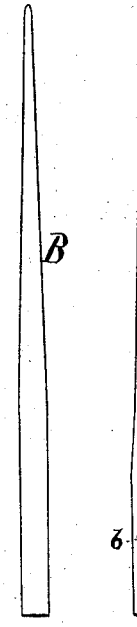
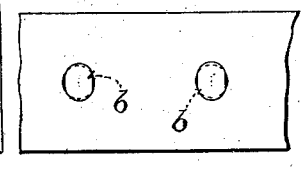


Fig. 9.



Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM CRABB, OF NEWARK, NEW JERSEY.

TOOTH FOR GILLING AND HACKLING MACHINES.

SPECIFICATION forming part of Letters Patent No. 287,506, dated October 30, 1883.

Application filed August 17, 1883. (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 a certain new and useful Improvement in Teeth for Gilling and Hackling Machines, of which the following is a specification.

My invention relates more especially to that class of combing apparatus—such as hackling, gilling, and similar machines—in which fibrous substances are treated to obtain parallelism and uniformity of arrangement of the fibers, although it is equally applicable to a variety of other machines of substantially the same operation and construction. Its object is to obtain a substitute tooth to take the place of those broken or worn out in use, which may be made from the same sized wire, and which shall be practically the equivalent of the original or preceding teeth in size and uniformity, and at the same time shall fit tightly and compensate for any wear or enlargement in the old socket when inserted in the place of that discarded. Teeth of this class are usually mounted so as to project in rows from suitable beds or backings, usually formed of iron or other comparatively soft metal, while the teeth after having the proper shape imparted to them are usually hardened before use. The teeth themselves are usually made from wire of standard sizes, varying more or less according to the style of machine and the nature of the work to be done, but always being uniform in diameter for any prescribed purpose. While the outer or upper ends are formed and sharpened according to the particular purpose for which they are designed, their inner or lower extremities are left cylindrical for the full diameter of the original wire, and these cylindrical ends are inserted into cylindrical holes or sockets in the base-pieces, which practically correspond in diameter to the size of the wire used; but the holes or sockets are always made sufficiently tight and small to necessitate the use of considerable force in driving the hardened tooth into place, otherwise the latter would soon work loose when subjected to use. It is obvious that in thus securing the original teeth in position the comparatively-soft substance of the bed-pieces or backing must be compressed more or less around the hard body of the tooth, and consequently when the latter is forced therefrom its socket or hole will be of larger area than it was originally. For this reason it has heretofore been practically impossible to replace the old teeth with new ones made from the same standard of wire, since the cylindrical part of the new tooth of standard size will fit but loosely in the old socket and cannot be relied upon to maintain its position. This has heretofore been obviated in some cases by forming the teeth to be substituted from wire of a size larger than that used for the preceding teeth; but in such cases the shanks or cylindrical portions of the new teeth have to be ground down or otherwise reduced in diameter to bring them within proper size for engagement with the sockets, since the enlargement of the latter from the cause set forth is, while sufficient to prevent the use of the old diameter of cylindrical shank, still very slight.

My invention consists in a tooth formed in the usual manner from cylindrical wire, but having the shank or portion which is designed to rest in the bed or plate flattened or otherwise distorted from its original shape while the blank is in a soft state, in such manner that it will present in cross-section an increased radial projection at one or more points, so that when tempered or hardened and driven into the socket vacated by a discarded tooth, it may be made to displace or compress more or less of the material constituting the walls of the socket, and thus secure for itself a permanent and rigid attachment.

In the accompanying drawings, Figure 1 is a longitudinal section of a portion of one of the cross-bars or backings in which the teeth are mounted for use in that class of combing-machines in which the combs thus formed are carried upon an endless belt. Fig. 2 is a view of the under side of the portion shown in Fig. 1. Fig. 3 is an elevation, enlarged, of one of the ordinary teeth; and Fig. 4, a plan of a portion of one of the cross-pieces or backings, showing the usual cylindrical holes or sockets for the reception of the shanks of the teeth. Figs. 5 and 6 are, respectively, elevations at right angles with relation to each other of my improved substitute tooth; and Fig. 7, a view of the under side of a portion of one of the cross-pieces or backings, showing two sockets

into which my substitute teeth have been forced, the original shape of the sockets being shown by the dotted lines. Figs. 8 and 9 are modified forms of the shank in cross-section, the original contour being indicated by the dotted lines.

In the drawings, A A represent portions of the ordinary cross-pieces or comb-backs, formed with the usual cylindrical holes or sockets, *a*, for the reception of the teeth B. The latter are formed in the usual manner from untempered cylindrical wire, the upper or projecting ends being reduced and sharpened by grinding. The shanks *b*, however, of the duplicate teeth B′, instead of being left cylindrical, as heretofore, are subjected to pressure in such manner that their shape in cross-section is changed so as to present augmented radial extensions in one or more directions. This is preferably done by simply flattening the shank *b* by hammering, passing between rollers, or other well-known means. The blanks or teeth thus as a whole are then subjected to any of the well-known processes of hardening or tempering. When the original or preceding teeth B, which Figs. 1, 2, 3, and 4 are designed to show, have become worn or broken, or for any reason need replacing, they are forced out of the sockets *a* in the cross-bars, leaving the said sockets slightly increased in area as compared with their original condition. Into the sockets thus vacated the shanks *b* of my substitute teeth B′ are forced, their increased radial projection in one or more directions compressing and displacing the comparatively-soft material composing the adjoining walls of the sockets, somewhat in the manner indicated in Fig. 7, in which the previous circular form of the sockets is indicated by the dotted lines. The supplementary teeth thus forced into position are held as firm and rigid by the cross-bars as the original teeth, and, being made of the same standard of wire, and their form above the shank being identical, they practically constitute perfect duplicates or substitutes, which can be made and applied as cheaply as the originals. It is obvious that the same result may be attained by other means than that of simply flattening the cylindrical shank—as for instance, by any change in shape in the cross-section of the original shank, as will be seen by reference to Figs. 8 and 9—and I do not, therefore, wish to confine myself to any particular configuration of shank; but

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

As an article of manufacture, a substitute tooth for replacing the teeth of gilling, hackling, and similar machines for treating fibrous substances, made from cylindrical wire of the same diameter as the original teeth, and formed with a shank having one or more radial projections, which exceed the radius of the hole or socket into which it is to be forced, substantially in the manner and for the purpose described.

WILLIAM CRABB.

Witnesses:
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WM. GARDNER.