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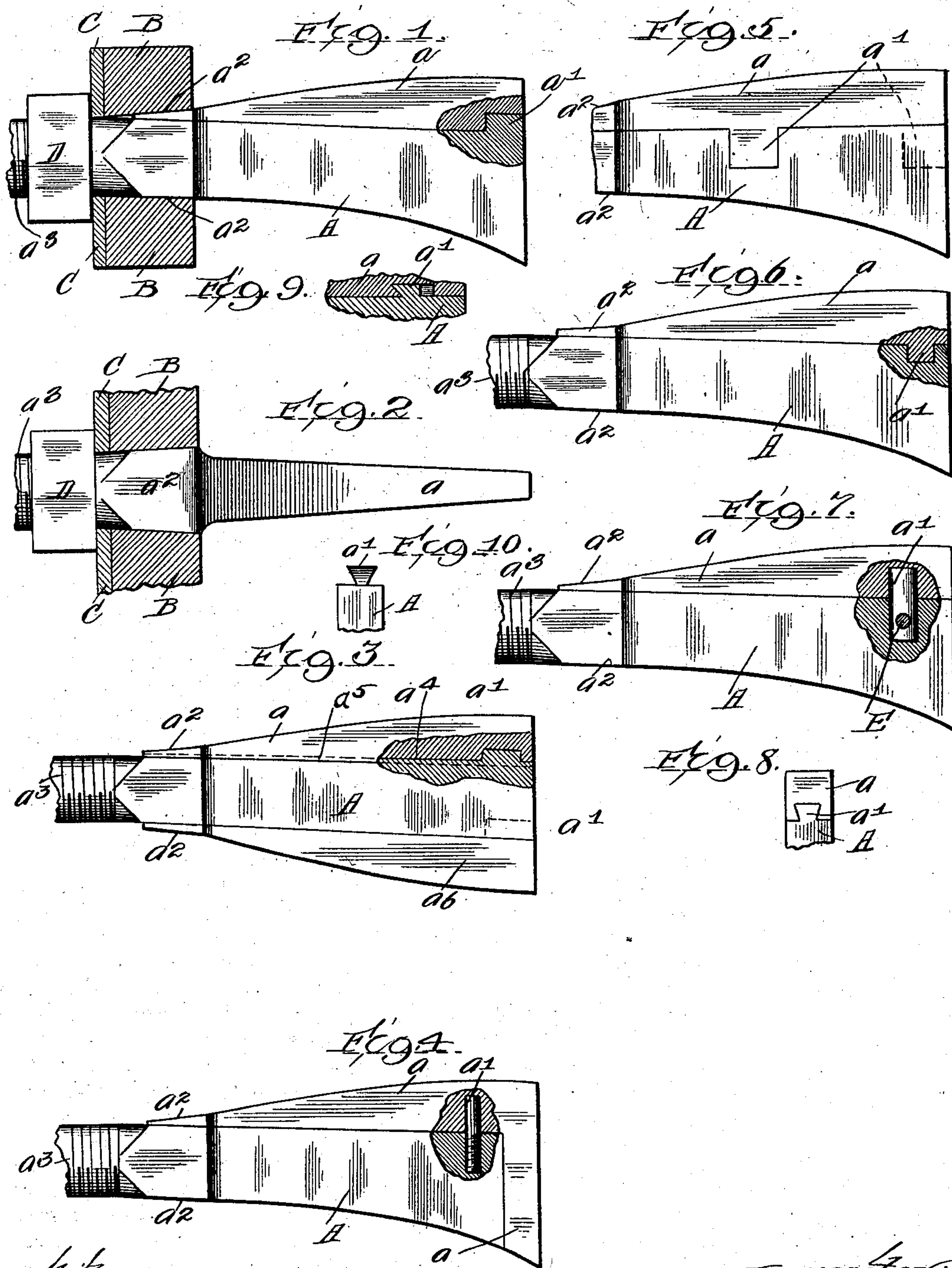
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J. F. SANDERSON.

THRESHING MACHINE AND MACHINE USED FOR ANALOGOUS PURPOSES.

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NO MODEL.



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UNITED STATES PATENT OFFICE.

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THRESHING-MACHINE AND MACHINE USED FOR ANALOGOUS PURPOSES.

SPECIFICATION forming part of Letters Patent No. 753,921, dated March 8, 1904.

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To all whom it may concern:

Be it known that I, JOHN F. SANDERSON, a citizen of the United States, residing in the town of Libertyville, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Threshing-Machines and Machines Used for Analogous Purposes, of which the following is a specification.

My invention relates to threshing and shredding machines, clover-toppers, and to devices employed for analogous purposes, while it particularly relates to cylinder and concave or breaster teeth therefor; and its object is to provide a tooth one or more of whose faces may be changed at pleasure; and to that end it consists in the features of construction and combination to be hereinafter more fully described, and pointed out in the claims here-
to annexed.

Referring to the accompanying drawings, wherein like reference-letters indicate the same or corresponding parts, Figure 1 is a side elevation, partly shown in section, of one form of my novel device. Fig. 2 is a plan view of a portion of the parts shown in Fig. 1. Figs. 3 to 8, inclusive, are side elevations of modifications (to be hereinafter more fully described) of some or all of the parts shown in Fig. 1 and illustrate a few of the numerous forms in which the principle of my invention may be embodied. Figs. 9 and 10 are fragmental views to be hereinafter more fully described.

It is well known to those skilled in the art to which this class of machine belongs that the faces of the cylinder-teeth are subjected to great wear, and yet at the same time it is impracticable to use teeth formed of case-hardened steel throughout, owing to the brittle nature of such material.

The object of my invention is to provide a tooth formed of tough material and a separate and removable face which may be composed of case-hardened steel or other suitable material and which may be readily removed from or secured to the tooth proper without the aid of screws, bolts, or rivets.

I will first describe the operation of the device of my invention in connection with the

form shown in Fig. 1. Referring to said figure, A is a tooth proper; a , a removable tooth-face; a' , a lug or pin adapted to assist in securing the face to the tooth; B, a cylinder-rim, breaster, or a tooth-bar forming a part of or secured to the cylinder or breaster, as the case may be; C, a washer or friction-plate; D, a nut of any suitable form; a^3 , a screw-thread formed on the bolt end of the tooth proper. In order to secure this form of the device of my invention to a cylinder, breaster, or tooth-bar, the threaded end a^3 of the tooth proper may be inserted through a suitable aperture or socket in the member B, the face a then properly placed on the tooth, so as to be engaged and prevented from outward longitudinal movement by the lug or its equivalent a' , and thereafter the nut D screwed upon the threads a^3 and against the friction member C in such manner as to forcibly draw back the tooth and its attached face until their further motion in that direction is arrested by reason of their contact with the member B, as at the roots a^2 . Said roots are tapered or wedge-shaped in order to increase the rigidity with which the parts will be held together when the nut D is screwed tight. This face now being prevented from longitudinal movement in either direction is likewise prevented from lateral movement. When it is desired to remove the face a from the tooth secured to the member B in the manner just described for any purpose whatsoever, it is but necessary to loosen the nut D to such an extent that the tooth proper and the removable face may be drawn outwardly far enough to permit of the face being readily removed from the tooth, following which, if wished, a new face may be placed on the tooth and the operation first described repeated, (so far as necessary,) thereby causing the tooth and the face attached thereto to again become properly secured to the cylinder or breaster.

We will now refer to the various modifications of my device.

The tooth shown in Fig. 3 is provided with two removable wearing-faces a and a^6 , the base of the face a being slotted or concaved, as at a^4 , to receive the convex or wedge-shaped portion a^5 of the tooth proper, A, and to be thus

more securely retained in position and prevented from lateral movement.

Referring to the modification shown in Fig. 4, the wearing face or faces *a* protects or protect the end as well as the upper portion of the tooth proper, while instead of and for the same purpose as the lug a screw-threaded removable pin *a'* is employed.

Referring to the modification shown in Fig. 5, two lugs or their equivalent are employed, the one engaging the tooth proper, A, at one side, the other engaging it upon the opposite side.

In Fig. 6 the lug or its equivalent *a'* engages the tooth proper instead of engaging the wearing-face *a*, as shown in Fig. 1.

In the modification shown in Fig. 7 the pin or lug *a'* is shown removably secured, by means of a pin E or its equivalent, to the tooth proper, A; but it is obvious that it may instead be secured to the member *a*.

Referring to the modification shown in section, Fig. 8, the wearing-face *a* is secured to and locked upon the tooth proper, A, by means of the dovetail-shaped member *a'*, which member may be either formed upon the tooth proper, as shown, and engage a suitable slot in the wearing-face or be formed on the wearing-face and engage a suitable slot in the tooth proper.

In the modification shown in sectional elevation, Fig. 9, the member *a'* is shown as having one of its faces undercut and engaging a suitable undercut slot.

Referring to the modified form of the member *a'*, (shown in face view, Fig. 10,) said member has its sides as well as one end undercut to prevent both longitudinal and lateral motion, it being understood that a suitable retaining-slot be provided in the tooth A if the member *a'* be or form a part of the face *a*, or vice versa.

In constructing my device I prefer that the tooth proper, A, be composed of a soft and less brittle material than the material of which the wearing face or faces is composed. The advantage obtained by this construction is that the tooth proper, which receives the brunt of the shock at a point approximate to the cylinder or concave, being of a more or less springy nature, will not be broken thereby. It will be understood, however, that it is not an essential element of the device of my invention that the wearing face or faces should be formed of tougher material than the material composing the tooth proper; but for purposes of economy to the user I prefer that the face or faces in order to more successfully withstand the wear should be of tool-steel or be case-hardened, while the member A be drop-forged. By so constructing the device the brittle character of the wearing-face is offset by the more or less resilient character of the tooth proper, which receives the full effect of such shock as may be imparted to the tooth as a whole when

in operation. It will thus be seen that by employing the device of my invention the same results will be obtained as would be effected were it possible to case-harden or otherwise toughen only the wearing face or faces of such teeth as are now known to the art without impairing the strength of the tooth as a whole. It will be further understood that it is immaterial what order of steps be taken to properly assemble the parts of my device, while it is obvious that the member *a'* may be of any suitable length and character and located at any desired point; and it is further obvious that the number, size, and form of the various parts of my device may be greatly varied without departing from the principle of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the class described, the combination of a tooth having a portion adapted to enter the cylinder-rim or tooth-bar; and a removable tooth-face having a wedge-shaped root also adapted to enter into and to be completely encircled by the cylinder-rim or tooth-bar to prevent lateral movement of said tooth-face on said tooth and thereby increase the rigidity with which the parts are held together when said tooth and tooth-face are forced toward the cylinder-rim or tooth-bar.

2. In a device of the class described, the combination of a tooth having a portion adapted to enter into the cylinder-rim or tooth-bar a sufficient distance to be completely encircled thereby to prevent lateral movement of said tooth-face on said tooth; a removable tooth-face having a wedge-shaped root also adapted to enter the cylinder-rim or tooth-bar; and means for forcing said tooth and tooth-face toward the cylinder-rim or tooth-bar to thereby tighten said tooth-face in position upon the tooth.

3. In a device of the class described, the combination of an apertured tooth-bearing part, such as a cylinder-rim or tooth-bar, a tooth having a portion adapted to enter said tooth-bearing portion; a removable tooth-face having a wedge-shaped root also adapted to enter the tooth-bearing part a sufficient distance to be completely encircled thereby to prevent lateral movement of said tooth-face on said tooth; and a bolt-and-nut device for drawing said tooth and tooth-face toward the tooth-bearing portion to thereby tighten said tooth-face in position upon the tooth.

4. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar, a tooth proper having a portion adapted to enter the aperture in said tooth-bearing part; a removable tooth-face also having a portion adapted to enter the aperture in said tooth-bearing part and be engaged thereby; and means near the outer extremity of said tooth

and tooth-face for detachably connecting the parts together.

5. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar, a tooth proper having a portion adapted to enter the aperture in said tooth-bearing part; a removable tooth-face also having a portion adapted to enter the aperture in said tooth-bearing part a sufficient distance to be completely encircled thereby for positive engagement therewith to prevent lateral movement of said tooth-face on said tooth; and interconnections between said tooth and tooth-face, said interconnections cooperating with the tooth-bearing part to hold said tooth and tooth-face together.

6. In a device of the class described, the combination with the tooth-bearing part such as a cylinder-rim or tooth-bar, of a tooth, a removable tooth-face, means near the outer extremity of said tooth for preventing lateral play of the tooth-face on the tooth and means at said tooth-bearing part for removably holding the tooth and tooth-face in contact with each other.

7. In a device of the class described, the combination with the tooth-bearing part, such as a cylinder-rim or tooth-bar of a tooth, a removable tooth-face, a lug near the outer extremity of said tooth for preventing lateral play of the tooth-face on said tooth; and means at said tooth-bearing part for removably holding the tooth and tooth-face in contact with each other.

8. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar; a tooth adapted to extend into the aperture in said tooth-bearing part; a removable tooth-face having a wedge-shaped root also adapted

to enter the aperture in said tooth-bearing part; means remote from the tooth-bearing part for preventing lateral play of the tooth-face on the tooth; and means for forcing said tooth and tooth-face toward said tooth-bearing part to wedge said tooth-face against said tooth.

9. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar; a tooth having a screw-threaded bolt portion adapted to extend through the aperture in said tooth-bearing part; a removable tooth-face having a wedge-shaped root also adapted to enter the aperture in said tooth-bearing part; means remote from the tooth-bearing part for preventing lateral play of the tooth-face on the tooth, and a nut screwing onto the bolt portion of said tooth for drawing said tooth and tooth-face toward said tooth-bearing part to wedge said tooth-face against said tooth.

10. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar; a tooth having a portion adapted to enter the aperture in said tooth-bearing part; a removable tooth-face having a wedge-shaped root also adapted to enter into said tooth-bearing part a sufficient distance to be completely encircled thereby for preventing lateral movement of said tooth-face on said tooth; means for forcing said tooth and tooth-face toward said tooth-bearing part; and means for preventing outward longitudinal movement of said tooth-face along said tooth when being forced toward said tooth-bearing part.

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