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DETACHABLE BLADE FASTENING MEANS FOR DIGGER TOOTH

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Fig. 1.

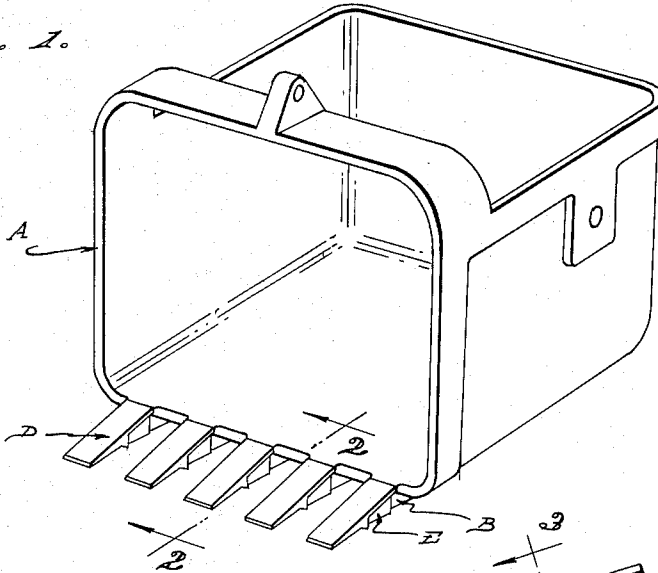


Fig. 2.

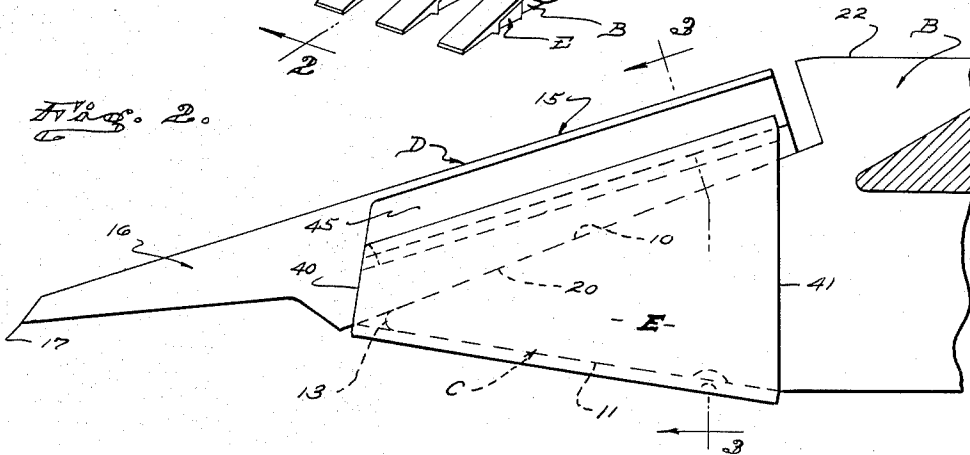


Fig. 3.

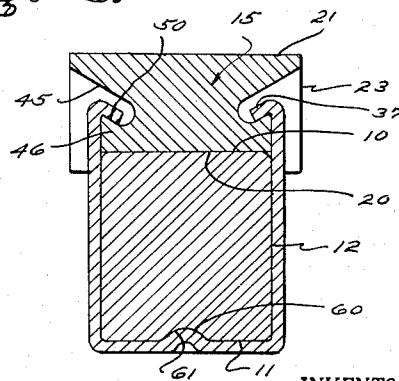
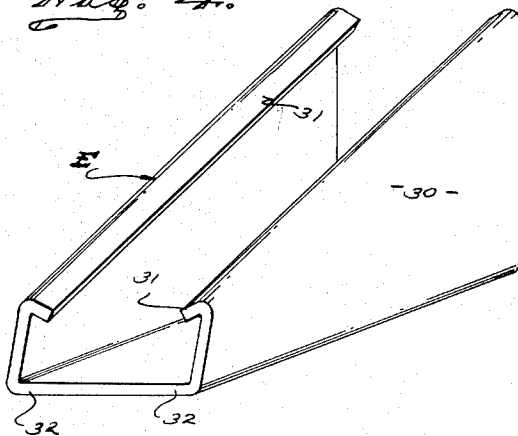


Fig. 4.



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DETACHABLE BLADE FASTENING MEANS FOR DIGGER TOOTH

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7 Claims. (Cl. 37—142)

This invention has to do with a digger tooth with a detachable blade and it is a general object of the invention to provide a simple, reliable, easily operated construction by which the blade is secured to the tip of the shank.

The construction in which the invention is included involves a forwardly projecting shank with a forwardly convergent tip thereon, an elongate blade adapted to seat on the top of the tip and having a forwardly projecting cutting part, and a suitable wedge means releasably coupling the blade and the tip together. The wedge means involves a substantially U-shaped sheet metal clip with side plates engageable with the sides of the assembled blade and tip, a bottom extending between the side plates and engageable under the tip, and flanges on the side plates and engageable over a part of the blade. The invention also provides a suitable detent means that serves to retain the clip on the tip.

A general object of this invention is to provide a tooth construction which is simple and compact and in which the cutting part or blade is a simple, elongate part free of projecting parts or supplemental elements such as cheeks, or the like, required for connecting it to the tip. In accordance with the invention the blade is formed completely of a simple elongate body of suitable material and it has no parts welded or otherwise joined thereto as is characteristic of constructions where the blade is a part of a cap which, in turn, is applied to the tip.

Another object of this invention is to provide a construction of the general character referred to wherein a simple dependable clip is employed to couple the blade and tip, the clip being formed separate from both the blade and the tip and being readily applicable to these parts.

Another object of this invention is to provide a structure of the general character referred to in which the desired holding action for the blade is gained through wedging of the blade against the top of the tip.

It is a further object of this invention to provide a blade holding clip for a structure of the character referred to which clip is of simple, inexpensive construction and which serves to securely and dependably retain a blade on a tip such as the tip of a shank, or the like.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of the invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a perspective view of an implement or bucket having a plurality of teeth projecting forward therefrom, each tooth including a blade secured on a shank through construction involving the present invention. Fig. 2 is an enlarged side elevation of a tooth construction being a view taken substantially as indicated by line 2—2 on Fig. 1. Fig. 3 is a detailed transverse sectional view taken as indicated by line 3—3 on Fig. 2 and Fig. 4 is a perspective view of the clip provided by the present invention for securing the blade on a tip.

The present invention is particularly practical for the

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mounting of a blade on the shank of a tooth and it is shown as applied to or incorporated in a tooth structure employed on a bucket A. The invention is included in a structure involving an elongate forwardly projecting shank B having a tip C projecting forward therefrom. A blade D is supported on the tip C and a clip E retains the blade on the tip.

The tip C is shown as an integral continuation or projection on the forward end of shank B and in accordance with construction or formation common to elements of this kind, it is forwardly convergent or tapered. The tip is shown as having a flat top 10, a flat bottom 11 and flat parallel sides 12. The top and bottom are spaced a substantial distance apart where the tip joins the shank and they converge to the forward end of the tip where they join or closely approach each other at 13.

The blade D is carried by the tip C and preferably rests or bears on the top 10 of the tip. The particular blade illustrated is a simple elongate member having a body portion 15 which rests on or is supported by the tip and having a forwardly projecting working portion 16 which extends or projects forward from the tip and has its outer end 17 dressed or finished to have the desired cutting or digging action. It is preferred in practice that the blade, and particularly the body portion of the blade, be substantially rectangular in cross sectional configuration. By forming the blade so that it is rectangular in cross section I provide it with a flat elongate bottom 20 which bears or seats upon the flat top 10 of the tip and with a flat elongate top 21 which may fair into the top 22 of the shank. In the particular case illustrated the body 15 of the blade is slightly tapered so that it is somewhat thicker at its outer or forward end than it is at the shank end. In the particular case illustrated the sides 23 of the body 15 are flat and parallel with each other and the blade is shown somewhat wider than the tip C so that the sides 23 of the body occur somewhat outward of or beyond the sides 12 of the tip.

The means provided by the present invention for retaining the blade D on the tip C is a wedge means and the structure employed is in the nature of a clip, it being preferred that the clip be a single unitary element or part that engages both the tip C and the blade D. In accordance with the broader aspects of the invention the clip may be sectional so it has individual or separate parts at the two sides of the assembled tip and blade. However, it is preferred that it be a single unit as shown in the drawings.

The clip E involves a side plate 30 at each side of the assembled tip and blade and each side plate is provided with a top inwardly projecting flange 31 and a bottom inwardly projecting part or flange 32. In the case illustrated, the inwardly projecting parts 32 of the two plates 30 are in a common plane and are joined together to, in effect, form a bottom for the clip and engageable with the tip C to bear against the bottom 11 thereof, as shown in the drawings.

Each side plate is preferably a simple flat plate substantially coextensive in length with the tip C and of greater vertical extent than the tip so that when the bottom flange 32 is engaged under the tip bearing on the bottom 11 thereof the upper portion of the side plate projects a substantial distance above the top 10 of the tip. Through this construction the inwardly projecting flange 31 at the upper edge of the side plate 30 occurs above or is spaced from the top 10 of the tip. Further, in accordance with the present invention the side plate 30 is so shaped that its upper edge portion from which the flange 31 projects is pitched in the same general direction as the top 10 of the tip, but is at a slight angle thereto, with the result that the flange 31, which is straight between the forward end 40 of the clip and the rear end

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41 thereof, is closer to the top 10 at the rear end of the clip than at the forward end. As a result of this relationship of parts the lower side or face of the inwardly projecting flange 31 and the upwardly facing top 10 of the tip C cooperate to define a channel which is tapered or rearwardly convergent as will be apparent from Fig. 2 of the drawings.

In accordance with the present invention the bottom flange 32 serving each side plate 30 bears or seats flat against the bottom 11 of the tip while the side plate 30 bears against the side of the tip and supports the top flange 31 in a position overlying the top 10 of the tip. The invention contemplates forming the blade D so that it engages between the top flanges 31 of the clip and the top 10 of the tip. In the preferred form of the invention, as shown in the drawings, recesses 45 are provided in the sides 23 of the body 15 of the blade to accommodate the upper edge portions of the plates 30 that carry the flanges 31. Ribs 46 are provided in the recesses 45 and project sideways or laterally of the blade to engage under the flanges 31 or between the flanges 31 and the top 10 of the tip. The ribs 46 are tapered longitudinally of the blade, the degree or pitch of the taper being the same as that of the channel established between the flanges 31 of the clip and the top 10 of the tip. With this construction a desirable wedging engagement is established between the flanges 31 and the top 10 of the tip so that as the blade D is pressed or thrust rearwardly on the tip it wedges tightly into the channels beneath the flanges 31 with the result that the blade is held tight against the top 10 of the tip. In accordance with the preferred form of the invention the top faces 50 of the ribs 46 engaged by the flanges 31 are pitched somewhat downwardly and inwardly and the flanges 31 instead of being shaped to extend transversely of the structure are pitched downward and inward, with the result that they seat flat against the pitched tops 50 of the ribs. Through this construction the upper edge portions of the plates 30 are, in effect, hooked to the blade and are thus held against lateral spreading or displacement from the blade.

The invention provides means releasably holding the clip in position on the tip C. In the particular case illustrated the means provided for this purpose is a detent means and is shown as involving a projection 60 on a part of the clip engaged in a suitable recess 61 in the tip. The projection 60 is located on the bottom of the clip and the depression 61 is in the bottom 11 of the tip.

From the foregoing description it will be apparent that the clip E, as provided by the present invention, can be advantageously formed from a sheet of material so that it is a simple, light, compact part easily handled and highly effective in holding the blade on the tip. By forming the body 15 of the blade so that it is somewhat wider than the tip the clip E is shielded or protected and will remain in service over a long period of time without appreciable wear or deterioration. When it is desired to renew or replace the blade it is merely necessary to drive the blade or the clip forward, thus relieving the wedging action so that the blade can be withdrawn from the clip leaving the clip free to be separated from the tip at will.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described my invention, I claim:

1. In combination, a tooth tip having a flat top, an elongate blade seated on the top of the tip and having ribs at the sides thereof, the blade projecting forward from the tip, and means coupling the blade and tip including, plates separate from the tip and blade and located at the sides of the assembled tip and blade, an

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inwardly projecting flange on each plate engaging a rib of the blade above the tip, and a bottom connecting the plates and engaged under the tip, the flanges being pitched relative to the top of the tip and cooperating therewith to form rearwardly converging channels into which the ribs of the blade are wedged.

2. In combination, a tooth tip having a flat top, an elongate blade seated on the top of the tip and having elongate tapered ribs at the sides thereof, the blade projecting forward from the tip, and means coupling the blade and tip including, plates at the sides of the assembled tip and blade, an inwardly projecting flange on each plate engaging a rib of the blade above the tip, and a bottom connecting the plates and engaged under the tip, the flanges being pitched relative to the top of the tip and cooperating therewith to form rearwardly converging channels into which the ribs of the blade are wedged.

3. In combination, a tooth tip having a flat top, an elongate blade seated on the top of the tip and having longitudinal recesses in the sides thereof carrying side ribs, the blade projecting forward from the tip, and means coupling the blade and tip including, plates at the sides of the assembled tip and blade, an inwardly projecting flange on each plate engaging a rib of the blade above the tip, and a bottom connecting the plates and engaged under the tip, the flanges being pitched relative to the top of the tip and cooperating therewith to form rearwardly converging channels into which the ribs of the blade are wedged.

4. In combination, a tooth tip having a flat top, a bottom converging with the top, and flat sides, an elongate blade seated on the top of the tip and having recessed sides with longitudinal tapered ribs therein, and a clip detachable from the tip and blade and including side plates at the sides of the tip and projecting above the tip, a bottom connecting the plates and seated on the bottom of the tip, and flanges projecting inwardly from the plates and engaged over the ribs, the flanges being pitched relative to the top of the tip defining tapered channels in which the ribs seat.

5. In combination, an elongate tooth tip having a flat top, an elongate blade seated on the top of the tip and projecting forward from the tip, and means coupling the blade and tip and movable relative thereto longitudinally of the tip and including, plates separate from the tip and blade and located at the sides of the assembled tip and blade, an inwardly projecting flange on each plate engaging the blade above the tip, and a bottom connecting the plates and engaged under the tip, the flanges being pitched relative to the top of the tip and cooperating therewith to form rearwardly converging channels into which the blade is wedged, and means retaining the first mentioned means on the tip including, a recess in the under side of the tip and a detent in the bottom and engageable in the recess.

6. In combination, an elongate forwardly converging tooth tip having a flat top, a flat bottom converging with the top, and flat parallel sides, an elongate blade seated on the top of the tip and having recessed sides with longitudinal ribs therein, and a clip separate from the tip and blade, the clip being movable relative to the tip and blade lengthwise of the tip and including side plates at the sides of the tip and projecting above the tip, a bottom connecting the plates and seated on the bottom of the tip, and flanges projecting inwardly from the plates and engaged over the ribs, the flanges and ribs being parallel to each other and rearwardly convergent relative to the top of the tip.

7. In combination, an elongate forwardly converging tooth tip having a flat top, a flat bottom converging with the top, and flat parallel sides, an elongate blade of substantially greater lateral extent than the tip seated on and overlying the top of the tip and having recessed sides with longitudinal inwardly pitched ribs therein, the ribs

being inclined longitudinally of the blade to converge rearwardly with the top of the tip, and a clip separable from the tip and blade and including side plates at the sides of the tip and projecting above the top of the tip and into the recessed sides of the blade, a bottom connecting the plates and seated on the bottom of the tip, and flanges projecting downwardly and inwardly from the plates and engaged over the ribs, the flanges having hooked engagement with the ribs, the clip being movable longitudinally relative to the tip and blade.

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