

Aug. 19, 1941.

R. E. NOACK

2,253,245

REPLACEABLE TOOTH UNIT FOR EARTHWORKING EQUIPMENT

Filed Nov. 25, 1939

2 Sheets-Sheet 1

Fig. 1

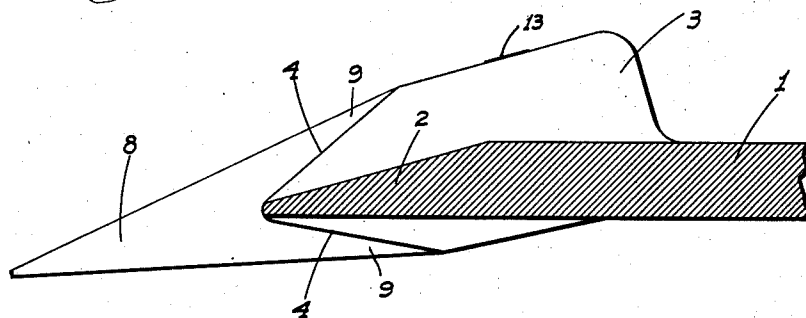


Fig. 2

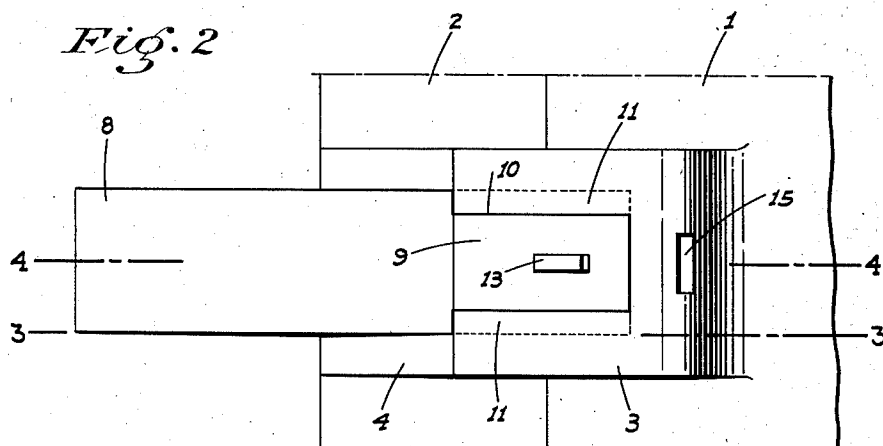
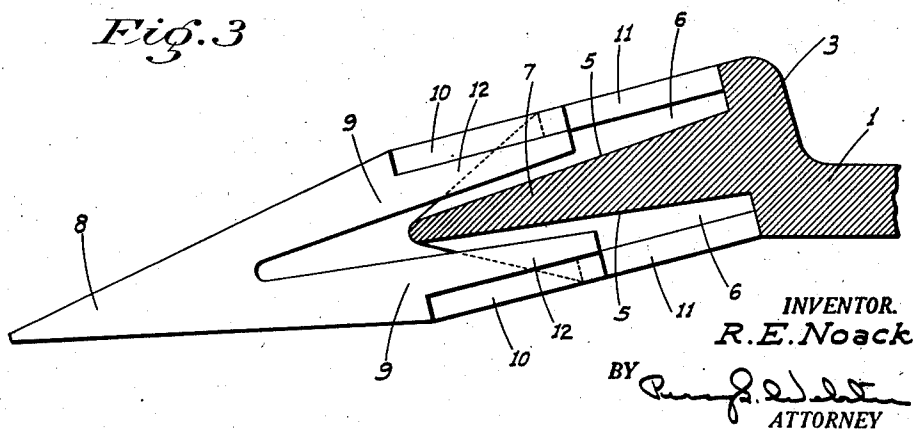


Fig. 3



Aug. 19, 1941.

R. E. NOACK

2,253,245

REPLACEABLE TOOTH UNIT FOR EARTHWORKING EQUIPMENT

Filed Nov. 25, 1939

2 Sheets-Sheet 2

Fig. 4

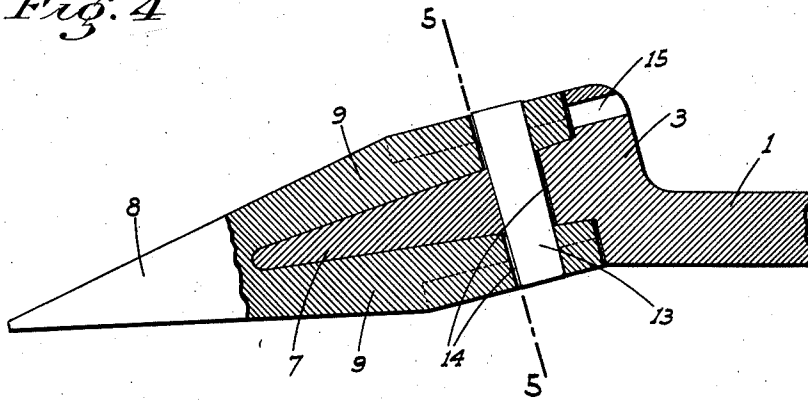


Fig. 5

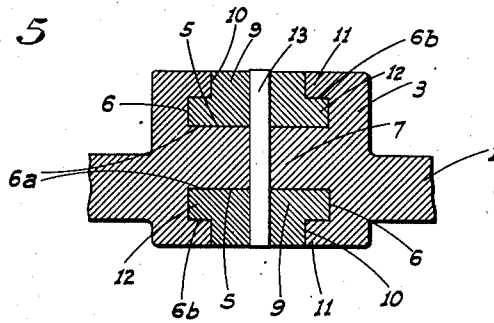
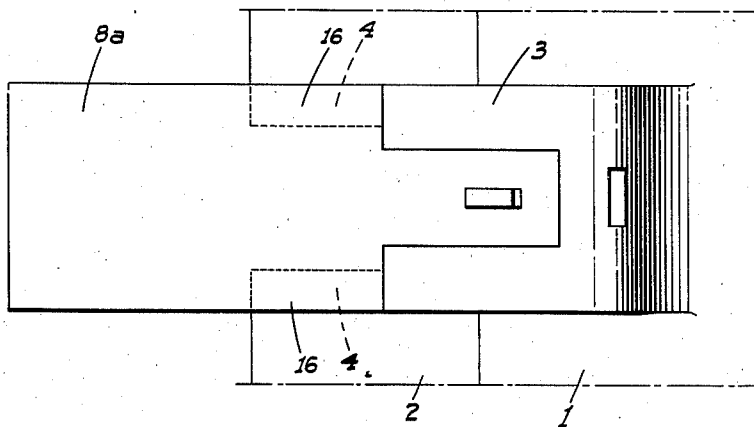


Fig. 6



INVENTOR.

R. E. Noack

BY

R. E. Noack
ATTORNEY

UNITED STATES PATENT OFFICE

2,253,245

REPLACEABLE TOOTH UNIT FOR EARTH-
WORKING EQUIPMENT

Robert E. Noack, Stockton, Calif.

Application November 25, 1939, Serial No. 306,087

2 Claims. (Cl. 37-142)

This invention relates in general to earth working equipment, and in particular the invention is directed to a replaceable tooth unit for such equipment, and especially for dredge buckets and the like.

Heretofore it has been a common practice to form forwardly opening sockets in the pad and lip of a dredge bucket, and to provide the removable and replaceable teeth with rearwardly projecting tangs which engage in the sockets. This arrangement is, however, subject to the objection that it is not only difficult to initially fix the tangs in the sockets in proper rigid relation, but it is also difficult to remove the tangs after use, and to thereafter clean the sockets preparatory to securing another tooth in place. Further, by forming the sockets in the pad and lip of the bucket, the strength of the resulting structure is not as great as is desired.

The principal objects of the present invention are to provide, in a unit of the type described, a one-piece replaceable tooth and mounting therefor in unique arrangement, the mounting including a novel combination of tapered parts cooperating with corresponding and symmetrical parts on the tooth, whereby the tooth is rigidly secured with the mounting during operation, and yet may be quickly removed and replaced when worn; to provide a tooth mounting which includes a base or body whose parts are accessible and may be readily cleaned preparatory to securing a tooth on said mounting; and to provide a tooth mounting which extends above and below the bucket pad and lip whereby to give additional strength and yet provide simplicity of the mounting.

A further object of the invention is to provide a replaceable tooth unit in which the tooth and mounting therefor are arranged with multiple cooperating bearing surfaces in different planes so that possible rocking or teetering of the tooth and resultant rapid wear and possible fracture are prevented.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of the improved

tooth and mounting therefor; the bucket pad and lip being shown in section.

Figure 2 is a plan view of the unit.

Figure 3 is a sectional elevation on line 3-3 of Fig. 2.

Figure 4 is a sectional elevation on line 4-4 on Fig. 2 showing the tooth fully engaged with the mounting.

Figure 5 is a cross section on line 5-5 of Fig. 4.

Figure 6 is a plan view showing a modified form of tooth.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 indicates the pad of a dredge bucket or the corresponding part of any earth working implement with which the replaceable tooth unit is adapted to be used; such pad being formed with a cutting lip 2, as is usual.

A number of the replaceable tooth units are disposed in laterally spaced relation along the pad and lip, but for the purpose of simplicity of description, a single unit will be described hereinafter in this specification.

Each such unit includes a tooth mounting or retainer which comprises an elongated and enlarged body formed integral with the pad and lip, and indicated generally at 3; such body being disposed with its major axis lengthwise of the plane of cutting movement of the pad and lip and inclined forwardly and downwardly relative to the pad as shown. The body is of substantial height and extends both above and below the pad and the lip, but mainly above the same, as shown; the forward end of the body for its full width being tapered out as at 4 to the cutting edge of lip 2.

Outwardly opening channels 5, of substantial width and depth, are cut into the body 3 from the top and bottom thereof, and extend lengthwise from a point adjacent, but short of, the rear end of the body to the forward end thereof; the forward ends of said channels being open. The sides of the channels are undercut or grooved as at 6 for the full length of said channels; the inner sides 6a of the grooves being flush with the bottoms of the channels.

The portion of the body between the upper and lower channels 5 forms a taper tongue 7 as the upper and lower surfaces of said portion converge to the forward edge thereof and of the lip 2. The outer sides 6b of groove 6 are parallel to each other, and as the inner sides 6a of said grooves form a portion of the converging surfaces of tongue 7, the grooves gradually increase in width toward their forward ends as

clearly shown in Fig. 4. The channels are cut so that the tongue has a slight downward slope to the front, and so that at its rear end, the tongue is mainly above the upper face of pad 1, as clearly shown in Fig. 3.

The tooth 8 is of one-piece construction, and includes a pair of rearwardly projecting prongs 9, whose adjacent faces taper to match the taper of tongue 7, which is wedgingly engaged therebetween when the unit is assembled. The outer edge portions of the prongs are mortised lengthwise as at 10 to correspond with and receive the lateral projections or flanges 11 on the body which overhang grooves 6; the resultant longitudinal portions 12 of the prongs thus engaging and wedging in grooves 6. The outer surfaces of prongs 9 in the plane of mortises 10 are parallel, and are flush with the corresponding outer surfaces of the body when the tooth is in place; the tooth tapering forward from the forward ends of said mortises.

The tooth is secured with the mounting against forward displacement by a drift 13 driven through openings 14 in prongs 9 and tongue 7. When the tooth and mounting are secured in unitary relation as above described, the tooth is rigidly secured and cannot teeter or rock during operation; and due to the fact that the body 1 presents a substantial upper and lower surface area flush with a portion of the tooth prongs, a relatively large wearing surface is presented, which assures longer life of the unit. Also, the unit prevents undue wear on the lip and pad.

In order to facilitate removal of the tooth from the mounting after drift 13 has been driven out, an opening 15 is formed through the body from its rear end and above pad 1, such opening leading through the upper channel 5 so that a drive-out pin may be inserted through said opening and abut against the end of the adjacent prong 9. After the tooth has been removed, it is possible to clean the mounting easily and quickly as the channels are open not only at their forward ends but for their full length, making the same readily accessible.

In Fig. 6 of the drawings, I have shown a

modified form of tooth. In this embodiment, the width of the tooth 8a is increased as at 16 to the width of the body from the peak of the body taper 4 forwardly whereby to overlap the body from side to side thereof; such laterally extended portions 16 of the tooth at their rear ends being symmetrical to and abutting against the tapered forward end 4 of the body. The advantage of the above is to give additional support for the tooth, as well as increasing the width of the same over its working area.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. In a replaceable digger tooth unit, a tooth including vertically spaced prongs having flat adjacent faces diverging to the rear end of the tooth to define a V shaped opening extending from side to side of the tooth, the prongs on their opposite faces and at the sides having mortise grooves cut therein from the rear end and open to said faces and to the sides of the prongs; and a tooth supporting body having a tongue shaped to fit said tooth opening, the body at the sides of the tongue overlapping the prongs on their sides when the tongue is seated in the opening, and flanges on the body at the top and bottom thereof and projecting laterally inward in overlying relation to the rear portion of the tongue and slidably engaging the tooth grooves.

2. A unit as in claim 1 in which the grooves and flanges are symmetrically disposed relative to the median plane of the tooth opening and tongue respectively and are parallel to each other.

ROBERT E. NOACK.