Jan. 19, 1954 W. W. EVERETT 2,666,272

EXCAVATOR BUCKET TOOTH

Filed Oct. 16, 1950

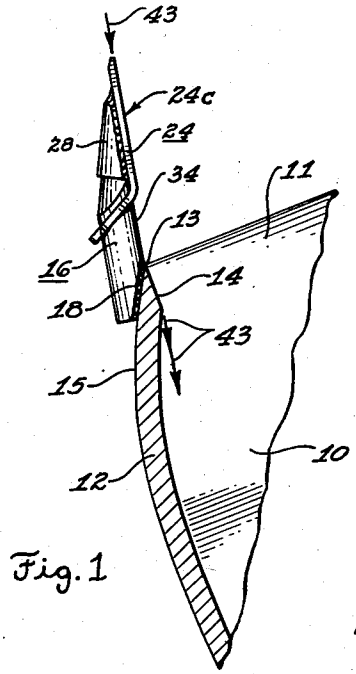


Fig. 1

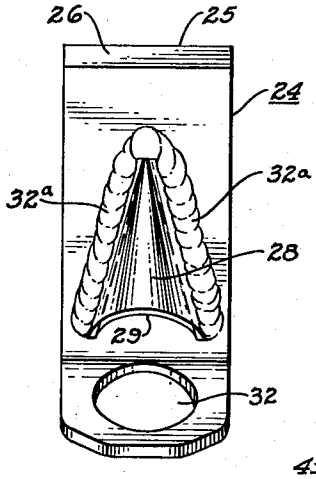


Fig. 5

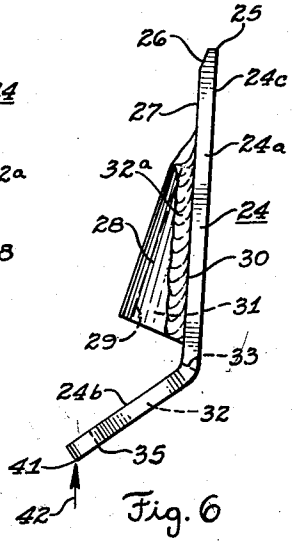


Fig. 6

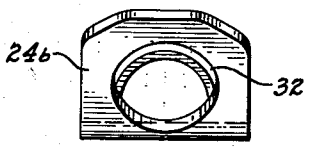


Fig. 7

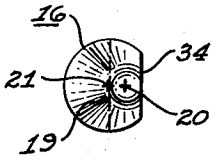


Fig. 4

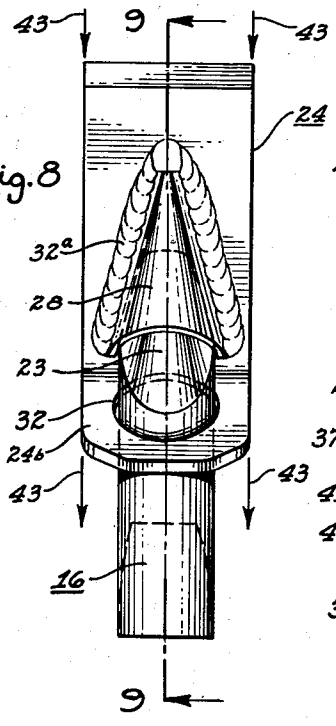


Fig. 8

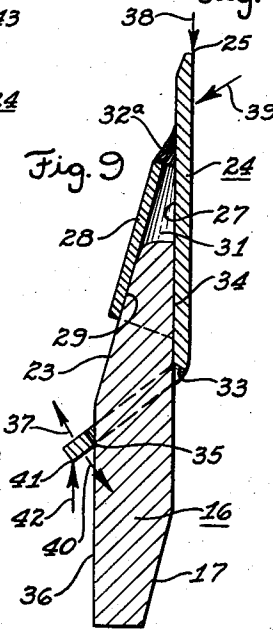


Fig. 9

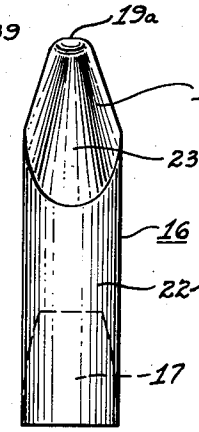


Fig. 3

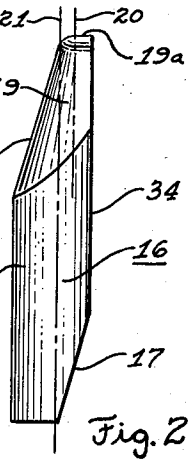


Fig. 2

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EXCAVATOR BUCKET TOOTH

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4 Claims. (Cl. 37—142)

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This invention pertains to excavating machinery, and more particularly is directed to improvements in excavator bucket teeth.

One of the objects of this invention is to provide an improved tooth for an excavator bucket which has a removable and replaceable tip.

Still another object of the present invention is to provide a removable tooth which is automatically held in place without the use of auxiliary fastening devices.

It is a still further object of this invention to provide a removable tooth arrangement for an excavator bucket in which the tooth tip may be driven home on a supporting tip fixed to the bucket and automatically held in locked position thereon by a resilient locking portion of the tooth tip and which may be readily removed by light tapping of said resilient holding member at a particular point.

A still further object of this invention is to provide an improved demountable tooth tip for an excavator bucket which automatically locks itself in position on the bucket and which holds itself with increasing rigidity when load is imposed upon the tooth tip during the digging operation.

Further features and advantages of this invention will appear for a detailed description of the drawings in which:

Fig. 1 is a side view of an excavator bucket tooth incorporating the features of this invention.

Fig. 2 is a side view of the supporting lug or tooth base member which is secured to the excavator bucket.

Fig. 3 is a front view of the member shown in Fig. 2.

Fig. 4 is a bottom view of the member shown in Fig. 2.

Fig. 5 is a front elevation of the demountable tooth tip shown in Fig. 1.

Fig. 6 is a side view of the demountable tooth tip shown in Fig. 5.

Fig. 7 is a bottom view of the demountable tooth tip shown in Figs. 1, 5, and 6.

Fig. 8 is a front assembled view of the improved demountable tooth mechanism incorporating the features of this invention.

Fig. 9 is a sectional view on the line 9—9 of Fig. 8.

For exemplary purposes this invention is shown applied to an excavator bucket 10 having the dirt receiving opening 11 and the bottom portion 12 which terminates in a sharp edge 13 formed by the beveled surface 14 of the member 12 of the bucket 10. To the outside surface 15 of the

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bottom 12 of the bucket 10 is mounted the tooth base support member 16 by its surface 17 and suitably welded in place at 18.

The outer end of the tooth base member 16 is formed with a truncated conical surface 19 whose axis 20 is eccentric to the main axis 21 of the semi-cylindrical body portion 22 of the member 16. The taper portion 19 has a tapered surface 23 converging toward the smaller pointed end 19a of the tooth base member 16.

The demountable tooth which may be placed on and removed from the support member 16 comprises the main plate member 24 having the cutting edge 25 formed by a suitable bevel surface 26 on its outer end. To the outer face 27 is formed the conical tapered member 28 having the inside semi-cylindrical surface 29 and the angular cut surface 30 so as to form a truncated conical aperture or socket 31 in the member 28 between the surfaces 27 of the tooth 24 and the semi-cylindrical surface 29 of the member 28. The member 28 may be formed as an integral forged or cast part of the member 24 or as an individual piece which is suitably welded at 32 to the surface 27 of the demountable tooth plate member 24.

The rear end of the member 24 is provided with an opening or hole 32 and is bent up at 33 at a substantial angle to the portion 24a of the member 24 so as to form a locking clip portion 24b on the member 24.

In order to facilitate proper seating and guiding of the tooth member 24 when placed on the tooth base support member 16, the member 16 is provided with a flattened guide surface 34 which nicely slides along the surface 27 of the member 24 inside of the member 28 as best seen in Fig. 9. The member 16 also enters diagonally through the opening 32 in the portion 24b of the tooth 24, the angularity of the member 24b being such that the edge 35 of the opening 32 is held firmly and resiliently against the surface 36 of the member 16 as the tooth 24 is finally driven home with full engagement of the tapered portion 19 of the member 16 in the tapered opening 31 in the member 28 as best seen in Fig. 9. Under these conditions the member 24b is slightly sprung in the direction indicated by the arrow 37 so as to maintain the aforementioned resilient contact of the edge 35 with the surface 36 of the member 16, the member 24 bending around a pivot point at 33. During the working operation of the tooth and bucket the force exerted against the cutting edge 25 in the direction indicated by the arrow 38 firmly holds the tooth 24 on the tapered portion 19 of the member 16. Other

forces exerted in the direction indicated by the arrow 39 during the digging operation are completely absorbed by the surface 34 of the member 16 abutting against the surface 27 of the tooth member 24 so that the harder work exerted on the tooth the more firmly it will be held against the supporting member 16.

Further, the tooth 24 cannot be pulled or otherwise withdrawn from the member 16 because when it is attempted to pull the tooth 24 in the opposite direction to that indicated by the arrow 38, the edge 35 in resilient contact with the surface 36 of the member 16 will cause the member 24b to swing in the direction indicated by the arrow 40 which further increases the pressure at the point 35 to cause the member 24b and the tooth 24 to be firmly locked against axial displacement from the member 16. Thus an automatic locking means self contained within the tooth 24 itself has been provided for securely holding the tooth to the member 16 without the use of any auxiliary holding or fastening means. It is to be further noted, however, that by striking the member 24b on the edge 41 in the direction indicated by the arrow 42 that the member 24b may readily be released and the tooth immediately and quickly removed. There is thus provided a demountable tooth which is automatically held in position on the bucket support member for the tooth without the use of any auxiliary holding means and which becomes more firmly held in place during the working operation, but which at the same time may be readily removed by striking with a hammer at a particular location for replacement when necessary. It is to be also noted that with this arrangement a completely smooth clean cut design is provided for high efficiency in operating in clay and other sticky gelatinous soil conditions. In this regard it will be noted that the surface 14 on the bucket 10, the surface 34 on the supporting tooth member 16 and the surface 24c of the member 24 form a substantially continuous smooth straight path of soil movement into the bucket 10 as indicated by the arrow 43 so as to provide high operating efficiency with a minimum of power requirement.

Having thus fully set forth and described my invention what is claimed as new and desired to be secured by United States Letters Patents is:

1. An excavator bucket tooth device for an excavator bucket comprising a support member fixed to said bucket, a tapered truncated conical portion formed on said support member, a flattened surface on one side of said support member facing in the direction of digging force applied to said device, a demountable tooth comprising a plate member, a tip on the outer end of said plate member, a truncated conical socket portion formed on the opposite side of said plate member from the surface thereof facing in the direction of digging force and engaging over said truncated conical portion of said support member, the rear surface of said plate member engaging the flattened surface on said support member, a resilient locking member inclined away from the digging face of said tip in the direction of said truncated conical socket portion, having an opening through which said support member projects into said truncated conical socket portion, and a locking edge on said resilient locking portion engaging said support member on the opposite side from said flattened surface thereof.

2. In a demountable tooth for an excavator bucket having a support member fixed to the bucket, a semi-cylindrical projecting portion on said support member terminating in a truncated conical portion having an axis offset from said semi-cylindrical portion in the direction of digging force applied to said demountable tooth, a flattened surface on said semi-cylindrical portion extending through said truncated conical portion and facing in said direction of digging force, a demountable tooth tip comprising a plate member having its rear surface facing in the opposite direction relative to said direction of digging force in engagement with said flattened surface adjacent said truncated conical portion of said support member, a truncated conical socket formed on said rear surface of said tooth tip matingly engaging over said truncated conical portion of said support member, and an integral inclined portion on said plate member of said tip located between said truncated conical socket portion and said bucket including a passageway therein for insertion of said support member therethrough with its truncated conical end portion in said socket member and having a locking edge engaging said support member on the opposite side thereof from said flattened portion to rigidly hold said tip on said support member.

3. In an excavator bucket tooth structure for an excavator bucket, a support member rigidly secured to the bucket, a tapered end portion formed on said support member, a flat surface on one portion of said tapered portion facing in the direction of digging movement applied to said bucket tooth structure, a demountable tooth tip comprising a plate member having a rear surface engaging said flattened surface and having a truncated conical socket engaging over said tapered end portion of said support member, a bent lower edge on said plate member deflected toward the side of said truncated conical socket including a bore formed therethrough for passage of said support member therethrough into said socket, and a locking edge in said bore engaging said support member on the opposite side from said flattened surface thereof to automatically lock said tip on said member.

4. In an improved excavator bucket tooth of the demountable type for an excavator bucket having a main support member fixed to the bucket, a tapered end portion formed thereon, a removable tip including a cutting edge plate member, a truncated conical socket formed on the rear face of said plate member adapted to engage over the tapered portion of said support member to provide the sole means for rigidly supporting the tooth on said support member on said bucket, a spring lock device formed on the other end of said plate member from its cutting edge end by an angularly disposed portion of said plate member, a passageway formed in said angularly disposed portion opening in front of the open end of said socket portion, and a locking edge in said opening engaging said supporting member to resiliently hold said truncated conical socket in engagement with said tapered end portion of said support member.

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