

[54] REPLACEABLE CUTTING EDGE AND TOOTH FOR EARTHMOVING MACHINES

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[58] Field of Search ....37/141, 142; 172/713

[56]

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[57]

ABSTRACT

A cutting edge for an earthmoving machine made in small replaceable modules each of which has a tooth-like portion extending forwardly therefrom so that replacement of worn parts can be done very economically.

8 Claims, 5 Drawing Figures

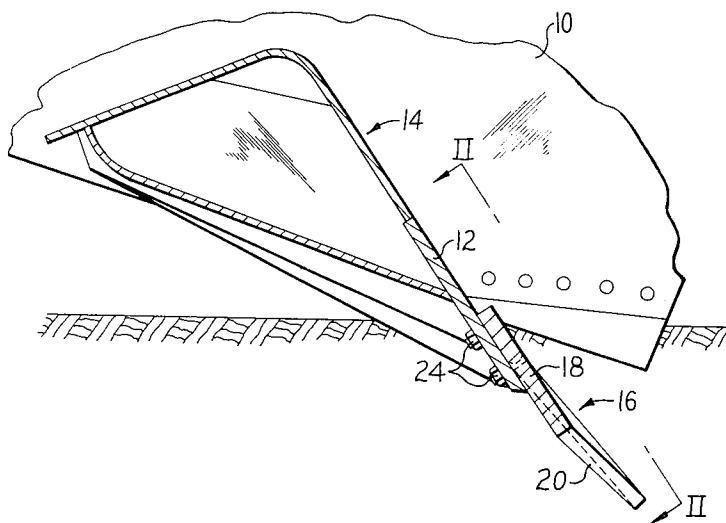


Fig-1.

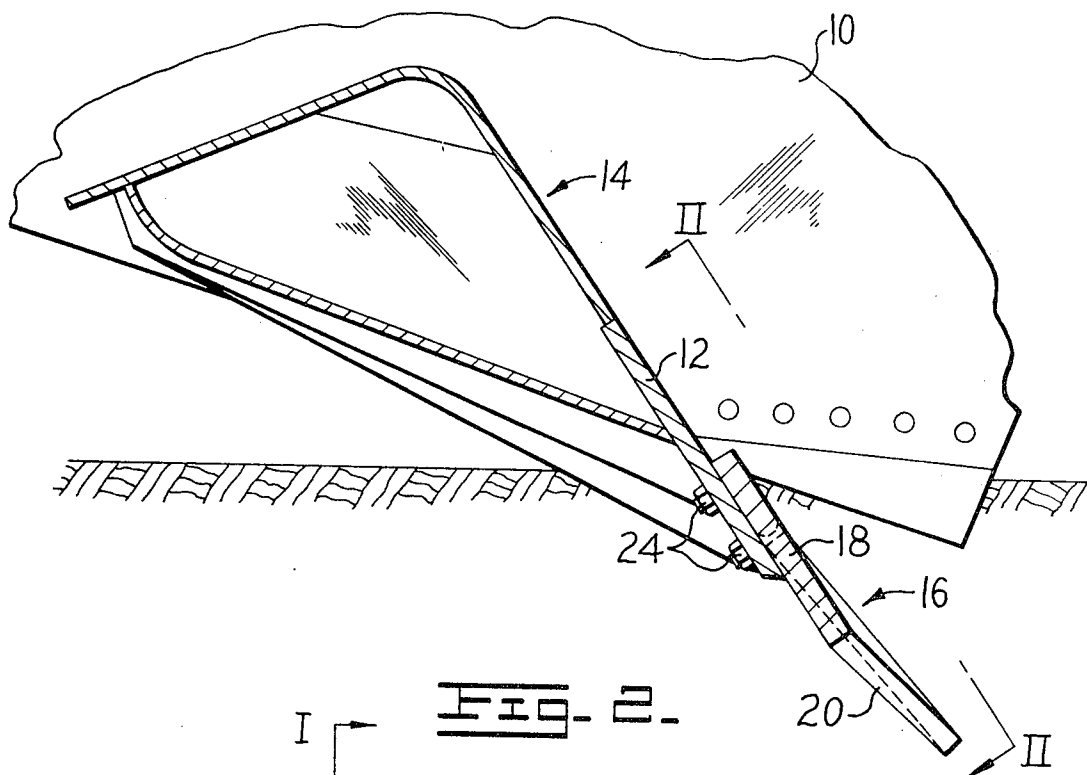
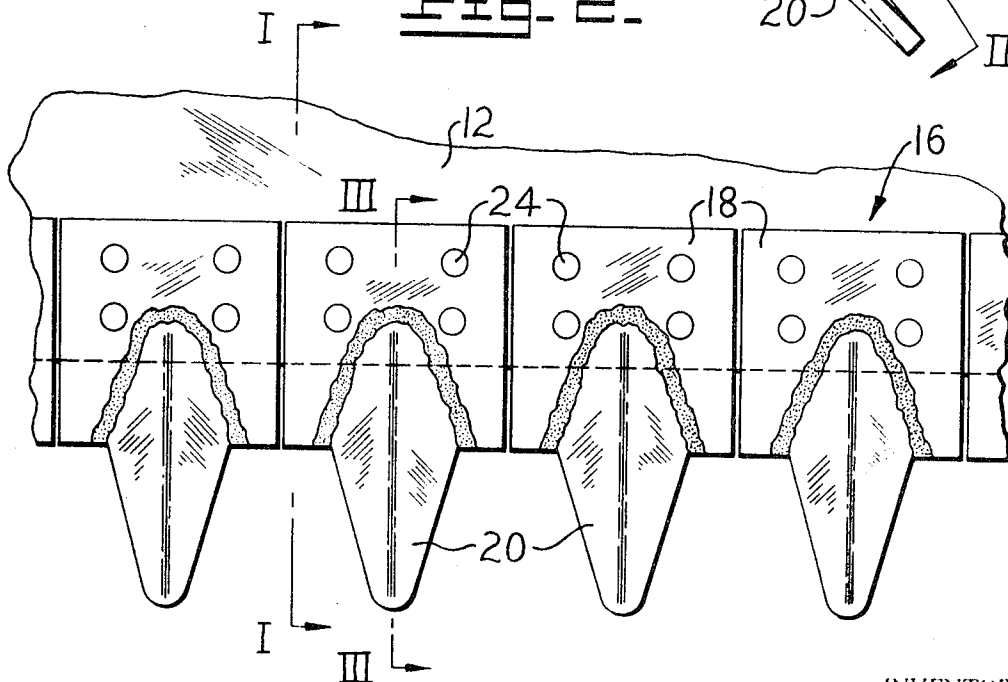


Fig-2.



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Fig. 3.

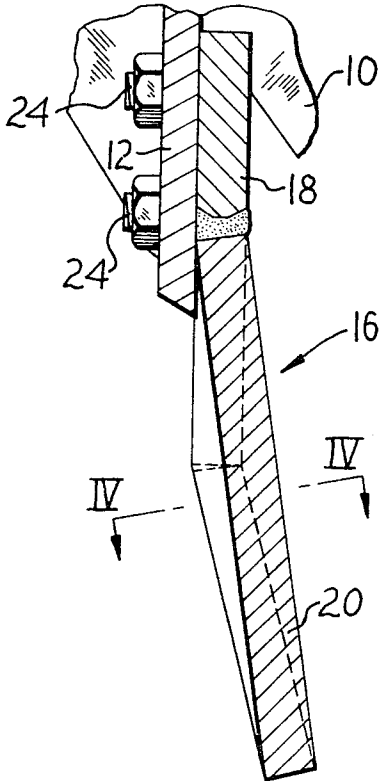
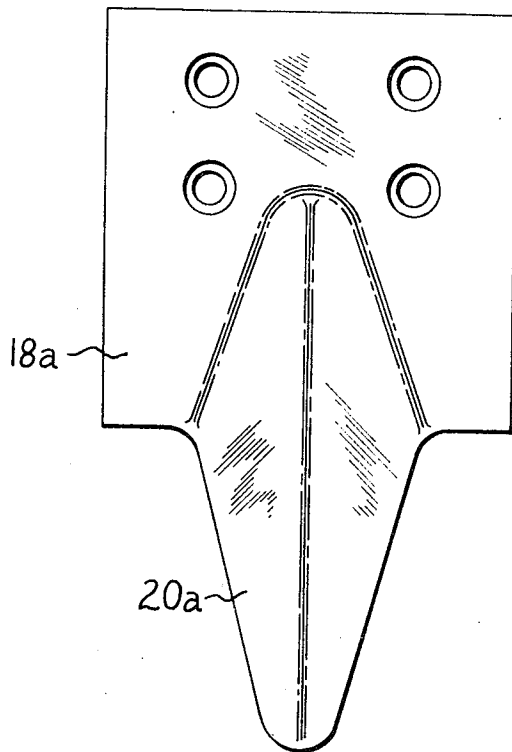


Fig. 4.



Fig. 5.



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REPLACEABLE CUTTING EDGE AND TOOTH FOR EARTHMOVING MACHINES

Presently, earthmoving machines such as buckets, loaders, scrapers and bulldozers are often fitted with teeth projecting forwardly of the cutting edge which engages the earth. This tends to break the earth up to increase penetrability of the edge and thus increase the overall efficiency of the machine.

Teeth for cutting edges are rather complex and costly. Each tooth generally includes an adapter fixed to and extending forwardly of the cutting edge, a hardened, replaceable tip for the adapter and retaining means for holding the tip in place. While the hardened tips can be replaced as they wear, it is also necessary in time to replace the cutting edge which requires removal and sometimes replacement of the adapter.

In accordance with the present invention, a short section or module of cutting edge is formed with a tooth as an integral part thereof, thus enabling several such modules to provide a toothed cutting edge. This eliminates the usual adapter and retaining pin and is economical and easily replaced. The invention will be better understood from the following specification wherein reference is made to the accompanying drawings.

In the drawings:

FIG. 1 is a fragmentary view of a portion of a scraper bowl illustrating the cutting edge and supporting parts therefor in cross section and taken from the line I—I of FIG. 2;

FIG. 2 is a view in plan looking down upon the cutting edge as from the line II—II of FIG. 1;

FIG. 3 is an enlarged sectional view through one of the tooth units taken from the line III—III of FIG. 2;

FIG. 4 is a sectional view taken along the line IV—IV of FIG. 3; and

FIG. 5 is a plan view of a modified form of tooth unit.

In FIG. 1, the forward lower corner of one of the side walls of a scraper bowl is represented at 10. A conventional blade support member 12 and ramp structure generally indicated at 14 extend across the bowl between the side walls to support a cutting edge generally indicated at 16 in FIGS. 1 and 2. In accordance with the present invention, the cutting edge is made up of combined cutting edge and tooth units, the cutting edge part being in the form of a rectangular plate 18, and the tooth part being an integral forwardly extending tooth shaped member 20.

The tooth elements 20 are welded into a V-shaped notch formed in the leading edge of the cutting edge members 18. A slight bend extending longitudinally of the tooth part increases the beam strength thereof and tends to increase the shedding of material from its surfaces as it passes through the earth. The modules are secured to the blade support 12 by conventional counter sunk bolts 24 such as are generally employed with cutting edges. FIGS. 3 and 4, which are enlarged cross sections of a module, illustrate the configuration particularly of

the tooth part thereof.

In FIG. 5, a modified form of a module is shown in which the cutting edge portion shown at 18a and the tooth portion 20a are formed by being stamped from a single plate of metal. In this case, the forming and bolt holes are, of course, done before hardening. The module shown in FIG. 5 has the same general configuration as that shown in the other figures of the drawings.

The modules disclosed may extend throughout the full length of an earth penetrating edge or, as in the case of a scraper, they may be disposed only throughout the central portion of the blade in the manner of a stinger bit.

What is claimed is:

1. A detachable cutting edge means attached to the earthworking surface of an earthmoving device, said cutting edge means comprising a plurality of module means detachably secured to said earthworking surface, each of said module means having a flat earthcutting edge member attached at a proximal part thereof directly to said earthworking surface and each of said module means also having a distinct earth-penetrating tooth member having a generally uniform cross-sectional thickness throughout its length and further having a rearward portion formed on a distal portion of said cutting edge member in substantial linear alignment therewith and a tooth portion extending forwardly and upwardly relative to said edge member to form an obtuse angle with respect to said earthworking surface.

2. The detachable cutting edge means as claimed in claim 1 wherein said cutting edge members and said earth-penetrating tooth members are integrally formed.

3. The detachable cutting edge means as claimed in claim 2 wherein said cutting edge members and said earth-penetrating tooth members are formed from a single piece of metal.

4. The detachable cutting edge means as claimed in claim 2 wherein said earth-penetrating tooth members are connected to said cutting edge members by means of welding.

5. The detachable cutting edge means as claimed in claim 2 wherein said cutting edge members and said earth-penetrating tooth members are formed of a single metal casting.

6. The detachable cutting edge means of claim 2 wherein said cutting edge members and said earth-penetrating tooth members are forged.

7. The detachable cutting edge means of claim 1 wherein each of said earth-penetrating tooth members has an inverted, V-shaped, cross-sectional shape which provides an upwardly projecting central longitudinal portion along the length of each of said tooth members.

8. The detachable cutting edge means of claim 7 wherein the transverse dimension of each of said tooth members increases progressively from the distal end of said tooth members to said distal portions of said cutting edge members.

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