DETACHABLE CUTTING EDGE AND TIP ADAPTER FOR LOADER BUCKETS

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[57] ABSTRACT

A loader bucket has a cutting edge mounted on the bottom surface of a forwardly extending plate thereof. A support member, welded to a top surface of the support plate, has an adapter mounted thereon which carries an earthworking tip extending forwardly of the cutting edge. A releasable bolt extends through the cutting edge, support plate, support member and adapter to detachably mount the cutting edge and adapter on the bucket.

4 Claims, 4 Drawing Figures
DETACHABLE CUTTING EDGE AND TIP ADAPTER FOR LOADER BUCKETS

BACKGROUND OF THE INVENTION

Loader buckets and similar types of earthworking implements have a cutting blade mounted on a forward end thereof and a plurality of transversely spaced earthworking tips mounted on the cutting edge. Many attempts have been made to detachably mount the cutting edge and/or tips on the bucket to facilitate their periodic replacement. For example, U.S. Pat. No. 3,550,293, assigned to the assignee of this application, discloses such a replaceable arrangement.

SUMMARY OF THIS INVENTION

An object of this invention is to provide an economical and non-complex detachable cutting edge and tip adapter for an earthworking implement which exhibits a high degree of structural integrity. The implement, such as a loader bucket, has a forwardly extending support plate which mounts a cutting edge on a bottom side thereof. A member is fixedly secured to a top side of the support plate and an adapter is mounted on the support member to have an earthworking tip thereon extend forwardly of a forward edge of the cutting edge. Common attaching means extend through each of the cutting edge, support plate, support member, and adapter to detachably mount the cutting edge and adapter on the implement.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects of this invention will become apparent from the following description and accompanying drawings wherein:

FIG. 1 is a partial, top plan view of a cutting edge and tip adapter detachably mounted on the bottom support plate of a loader bucket;
FIG. 2 is a partially sectioned, side elevational view of the FIG. 1 construction;
FIG. 3 is a sectional view taken in the direction of arrows III—III in FIG. 2; and
FIG. 4 is a view similar to FIG. 3, but illustrating a modification of means for mounting the tip adapter on the loader bucket.

DETAILED DESCRIPTION

FIGS. 1–3 illustrate an earthworking implement 10, such as a loader bucket, comprising a forwardly extending bottom support plate 11 having a support member 12 secured to a top surface thereof by welds 13. Although the hereinafter described detachable cutting edge and tip adapter are particularly adapted for loader bucket applications, it should be understood that such constructions may be employed on the work implements of scrapers, motor graders and other types of earthworking machines. A reversible cutting edge 14, preferably in the form of a flat plate extending transversely the full width of the loader bucket, is mounted on a bottom side of the support plate to extend past a forward edge thereof.

As shown in FIG. 3, support member 12 has an inverted U-shape to define a longitudinally extending groove 15 therein. An adapter 16 has a rectangularly shaped tongue 17 formed therein which fits snugly in like-shaped groove 15 to form a closely mating tongue and groove arrangement thereat, preventing the adapter from moving laterally. A pin 18 (FIG. 2) extends transversely through the support member and the adapter in press-fit relationship therewith to prevent the rearward end of the adapter from moving vertically.

Common attaching means, preferably comprising a nut 19 threadably mounted on the end of a bolt 20, extends through the cutting edge, support plate, support member and adapter. The attaching means thus detachably mounts the cutting edge and the adapter on the support plate and the support member, respectively. The bolt has a conically shaped head 21 which is nested in a like-shaped recess formed in the cutting edge.

The forward end of support member 12 abuts laterally spaced bearing surfaces 22 (FIG. 1), formed on the adapter to transmit digging forces from the adapter directly to the support member and the support plate. A digging tip 23 is detachably mounted on a forward end of the adapter by a press-fitted pin 24. The tips (one shown) extend forwardly of a forward edge of cutting edge 14 to cooperate therewith during the earthdigger and loading functions. Although only a single bolt 20 is required to attach the adapter in place, additional bolts may be required to attach the cutting edge directly to support plate 11, between each pair of laterally spaced adapters.

FIG. 4 illustrates a modification of the FIG. 3 tongue and groove arrangement wherein like numerals are employed to depict corresponding constructions. Numerals depicting modified constructions are accompanied by an "a." In particular, a support member 12a has a longitudinally extending groove 15a formed therein which has an inverted T-shaped cross section. An adapter 16a has a like-shaped tongue 17a, disposed in the groove, to prevent the adapter from moving both vertically and laterally relative to the support member. Therefore, the FIG. 4 tongue and groove arrangement does not necessitate the further employment of a cross-pin, corresponding to pin 18 in FIG. 2. What is claimed is:

1. An earthworking implement having a forwardly extended support plate, a cutting edge mounted on a bottom side of said support plate and extending past a forward edge thereof, a support member fixedly secured to a top side of said support plate, an adapter mounted on said support member and having a removably secured earthworking tip thereon extending forwardly of a forward edge of said cutting edge, and said adapter being mounted on said support member by a closely mating tongue formed integrally therewith and a mating groove arrangement formed in said support member extending longitudinally therealong, respectively said adapter having substantial surface portions formed thereon to abut a forward end of said support member for transmitting forces from said tip to said support member and support plate directly, common attaching means constituting a single bolt extending through each of said cutting edge, support plate, support member and adapter detachably mounting said cutting edge and adapter on said support plate and support member, respectively, pin means disposed rearwardly on said tongue and groove arrangement and extending transversely...
through said support member and said adapter for preventing vertical movement of said adapter relative to said support member.
2. The invention of claim 1 wherein said working implement constitutes a loader bucket.

3. The invention of claim 1 wherein said tongue and groove each has a rectangular cross section.
4. The invention of claim 1 wherein said tongue and groove each has an inverted T-shaped cross section.