April 17, 1962 M. RAKISITS 3,029,534

BULLDOZER MOLDBOARD CORNER BIT

Filed May 23, 1960

Fig. 2.

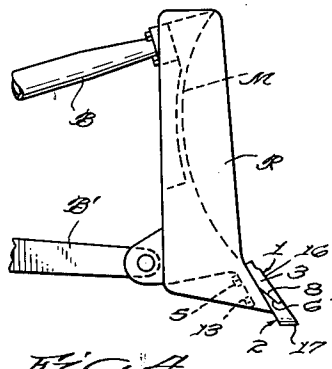


Fig. 1.

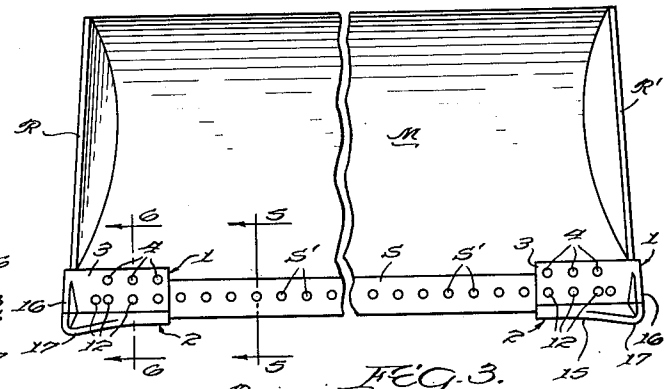


Fig. 4.

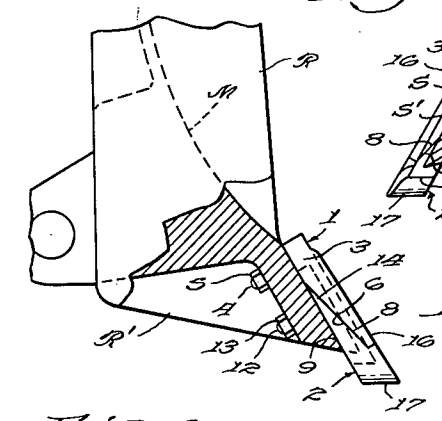


Fig. 5.

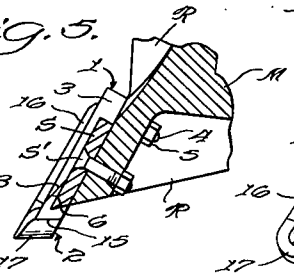


Fig. 3.

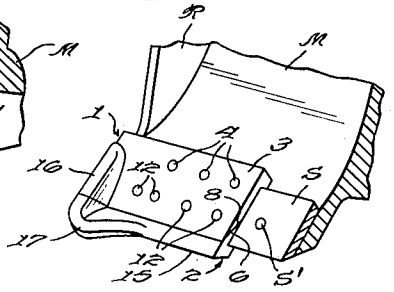


Fig. 8.

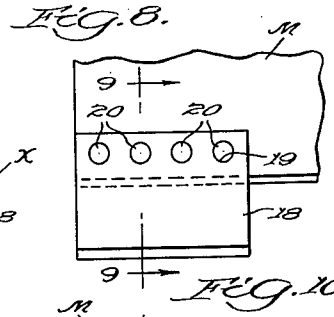


Fig. 9.

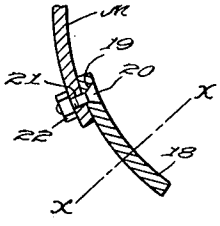


Fig. 6.

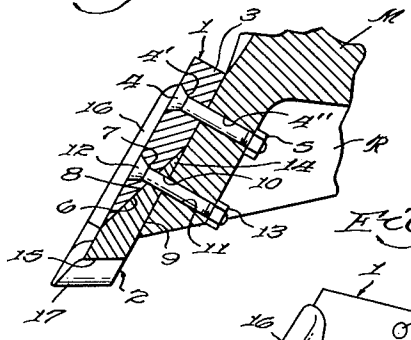


Fig. 10.

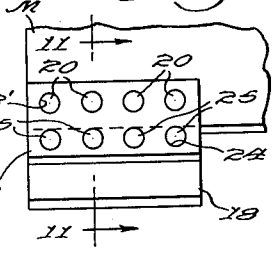
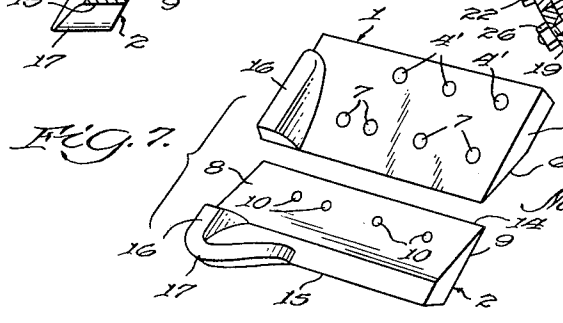


Fig. 11.

Fig. 7.



INVENTOR.

Michael Rakisits.

BY

Harold J. DeVesconte

Atty.

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BULLDOZER MOLDBOARD CORNER BIT

Michael Rakisits, 2700 Pine Ridge Lane, La Crescenta, Calif.

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1 Claim. (Cl. 37—141)

This invention relates to earth moving apparatus and more particularly to an improvement in the replaceable corner bits for the moldboards of bulldozers.

The corners of bulldozer blades (commonly called moldboards) are customarily supplied with replaceable bits to absorb the wear and abrasion incident to use. When the cutting edge of the bits is worn away, the bit must be scrapped and replaced. The bits currently available for such use have an insufficient amount of metal for the sacrificial cutting edge portion thereof with the result that they are subject to frequent replacement at very considerable expense.

Having this situation in mind, the principal objects of the present invention are to provide a replaceable corner portion or bit for bulldozer moldboards characterized by certain novel configurations which present additional cutting edge metal for sacrificial wearing, which are so anchored to the moldboard as to be capable of withstanding service stresses, which are simple in construction and economical to manufacture, and which are readily installed and removed incident to replacement when they are worn out.

With the above objects in view, together with such additional objects and advantages as may subsequently appear, the invention resides in the parts and in the construction, combination and arrangement of parts, described, by way of example, in the following specification of certain presently preferred embodiments of the invention, reference being had to the accompanying drawings which form a part of said specification and in which:

FIG. 1 is a front elevational view of a bulldozer moldboard showing the corner bits comprising one embodiment of the invention attached thereto, the center portion of the moldboard being broken away to conserve space,

FIG. 2 is a side elevational view of the left hand side of FIG. 1,

FIG. 3 is an enlarged, front prospective view of the left hand corner bit shown in FIG. 1,

FIG. 4 is an enlarged, fragmentary, side elevational view of the lower, left hand side portion of FIG. 1, a portion of the moldboard being broken away to illustrate the configuration thereof otherwise concealed,

FIG. 5 is an enlarged, fragmentary, sectional view taken on the line 5—5 of FIG. 1,

FIG. 6 is a further enlarged, sectional view taken on the line 6—6 of FIG. 1,

FIG. 7 is a prospective view of the components of the first form of corner bit and mounting means shown in the preceding figures,

FIG. 8 is a front elevational view of the corner of a bulldozer moldboard showing a second embodiment of the invention as initially mounted thereon,

FIG. 9 is a sectional view taken on the line 9—9 of FIG. 8,

FIG. 10 is a view similar to FIG. 8 but showing the said second embodiment of corner bit mounted on the moldboard by means of an adaptor to make more of the bit available for use, and

FIG. 11 is a sectional view taken on the line 11—11 of FIG. 10.

Referring first to FIGS. 1 through 7, there is shown a bulldozer moldboard M supported on the ends of upper and lower bars B and B′ by which it is mounted on

the front end of the tractor or bulldozer and raised and lowered by the usual power means (not shown) attached to the said bars. The moldboard is formed from heavy steel and is concavely curved as viewed from the front and is reinforced by side ribs R and R′ formed integrally therewith. The rear face of the moldboard is also provided with suitable bosses for attachment of the bars B and B′. Along the lower edge of the moldboard and extending between points inwardly of the side edges of the moldboard is a replaceable share S formed of hardened steel which is detachably secured to the moldboard by bolts S′ extending through the moldboard as best shown in FIG. 5.

The present invention comprises a mounting bracket component 1 hereinafter referred to as the adaptor, and the replaceable bit component 2. As will be apparent from FIG. 1, they are commonly provided in right hand and left hand sets for the opposite lower corners of the moldboard. Since, except for the reversal of the end portions thereof, the sets are identical, a description of the left hand set will serve for both and for that reason the same numbers will be applied to the corresponding portions of the right hand set. The adaptor 1 comprises a flat base portion 3 secured to the lower front face of the moldboard by a series of countersunk head bolts 4 seated in a horizontal row of complementary holes 4′ in the adaptor and thence through holes 4″ in the moldboard and engaged by nuts 5 on the rear face of the moldboard. The adaptor extends from a point slightly outside of the adjacent side edge of the moldboard to the adjacent end of the share S. Forwardly of the bolts 4, the under face of the adaptor extends at an acute divergent angle with respect to the moldboard surface forming a sloping underface portion 6.

Toward the forward or lower edge thereof, the adaptor is provided with a second horizontal row of countersunk, bolt receiving holes 7 extending through the face portion 6. The bit component 2 is of equal length to the adaptor and is provided with a sloping top surface 8 which is complementary to the sloping surface 6 of the adaptor and with a bottom surface 9 which engages the front face of the moldboard, wherefore, it fits in the space provided by the divergence of the adaptor face 6 and the moldboard. This portion of the bit is provided with a row of holes 10 which are aligned with the holes 7 in the adaptor and with corresponding holes 11 in the moldboard. A series of countersunk head bolts 12 is disposed in the holes 7 and thence extend through the complementary holes 10 and 11 and are engaged by nuts 13 at the rear face of the moldboard and are thereby effective to clamp the tapered edge 14 of the bit tightly between the spaced, opposed faces of the adaptor and moldboard. By this arrangement, the forces acting on the bit component incident to use subject the bolts 12 to both tension and shear stresses whereby they are better able to hold the bit tightly clamped against the moldboard.

The lower edge 15 of the bit protrudes beyond the lower edge of the share and the outer side edge extends laterally beyond the side edge of the moldboard to the same extent as the adaptor. The side portion which thus extends beyond the side of the moldboard and beyond the lower edge of the moldboard provide the metal which is intended to be lost through abrasion in use. Both to strengthen the bit and adaptor and to provide still additional metal which may be thus abraded with increased life of the bit, the bit and adaptor are provided with a forwardly projecting rib 16 which begins on the outer side edge of the adaptor and which continues along the corresponding side edge of the bit thence forming a rounded point 17 on the lower corner of the bit and thence continues sloping and tapering back to

the plane of the lower edge of the bit at about the mid-length of the bit. By this means, the most metal (hardened steel) is provided at the point subjected to the greatest wear.

FIGS. 8 through 11 illustrate another embodiment of the invention which, while not adapted for as rugged service as the first described form, possesses the advantage of being cheaper to manufacture and therefore provides a bit which is desirable in those uses involving less rugged service. In this form of the invention, the corner bit **18** comprises a block of hardened steel which is generally rectangular in plan and which is bent to the curvature of the front face of the moldboard. Along its upper edge, it is provided with a series of equally spaced countersunk holes **19** in which the tapered heads of a series of bolts **20** are received. The bolts extend through a corresponding series of holes **21** through the moldboard near the lower edge thereof and are engaged by nuts **22** at the back of the moldboard to clamp the bit to the corner thereof as shown in FIGS. 8 and 9. When, however, the forward edge of the bit has been worn back to some point as, for example, that represented by the line X—X in FIG. 9, the bit is removed from the moldboard and an adaptor plate **23** is clamped on the moldboard by the bolts **20** and nuts **22**, the heads of the bolts engaging countersunk holes **23'** in the adaptor plate which mate with the holes **21** in the moldboard. The adaptor extends beyond the lower edge of the moldboard and carries a second row of countersunk holes **24** which are parallel to the holes **19** and which are disposed beyond the edge of the moldboard a distance which is equal to the distance of the rear edge of the bit from the holes **19** thereof. A second series of bolts **25** extends through the holes **24** and **19** and are engaged by the nuts **26** to clamp the bit to the under side of the adaptor plate **23** with the edge of the bit abutting the lower edge of the moldboard and with additional metal of the bit thus made available to increase the useful life of the bit. It will further be noted that additional manufacturing economies are achieved in this second form of the invention by reason of the fact that the lack of the reinforcing corner rib makes it possible for the same bit to be used at either the right or left hand corner of the blade.

While in the foregoing specification, there have been described, certain presently preferred embodiments of the invention, it will be understood that such disclosure has been by way of example, wherefore, the invention is not to be deemed to be limited to the specific details of such disclosure and, accordingly, it will be understood that the invention includes as well, all such changes and modification in the parts, and in the construction, combination and arrangement of parts as shall come within the purview of the appended claim.

I claim:

In combination with a bulldozer moldboard a replaceable bit means comprising, an adaptor component and a bit component, said adaptor component having a horizontally aligned series of holes extending therethrough adjacent the upper edge thereof and the moldboard having a series of complementary holes extending therethrough and positioned to locate said adaptor upwardly of a lower corner of the moldboard by bolts extending through said holes in said adaptor and said moldboard, said adaptor at the lower edge thereof having a downwardly extending under surface diverging from the plane of the front face of the moldboard toward the lower edge of said adaptor, and said bit component having an earth engaging edge disposed beyond the lower edge of the moldboard and at the upper edge thereof having front and back face portions complementary to said diverging faces of the moldboard and underlying said diverging face of said adaptor, a series of horizontally aligned holes extending through said adaptor, the underlying portion of said bit and the moldboard, and a series of bolts extending through said last named series of holes, effective to clamp the upper edge of said bit between said adaptor component and the moldboard said engagement between the faces of said adaptor and said bit which diverge from the moldboard being effective to cause the bolts extending through said last named series of holes to be subjeccted to tension by the stresses imposed on said bit incident to use.

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