April 5, 1966 H. H. WASHBOND 3,243,906

EXCAVATING BUCKET STRUCTURE

Filed Oct. 14, 1963

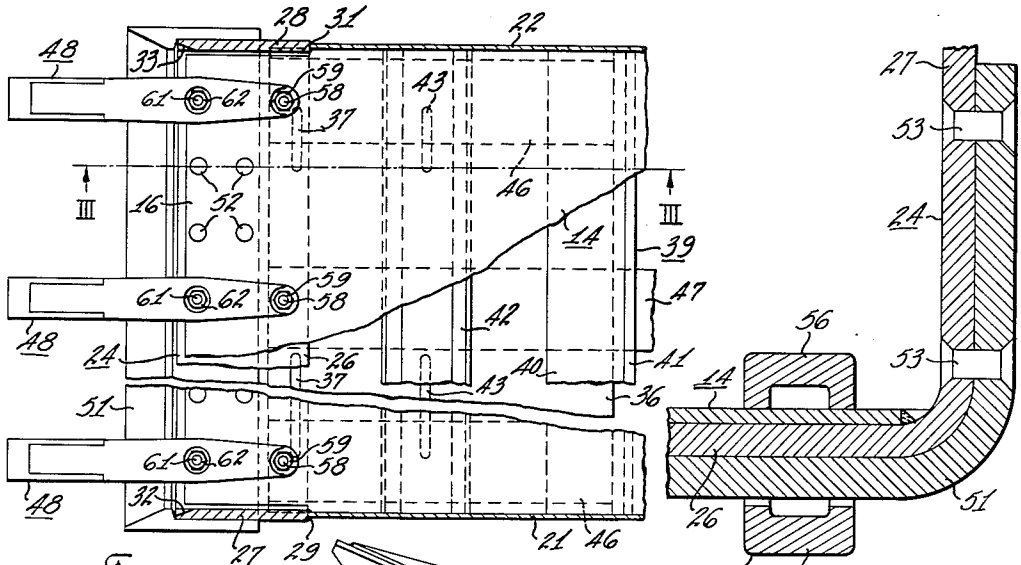


Fig. 2

Fig. 4

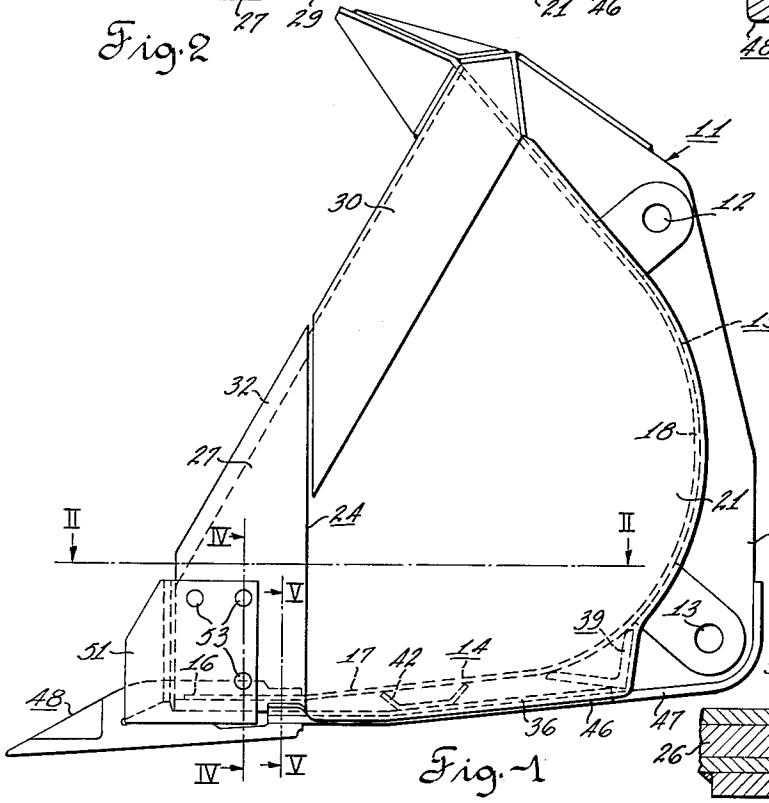


Fig. 1

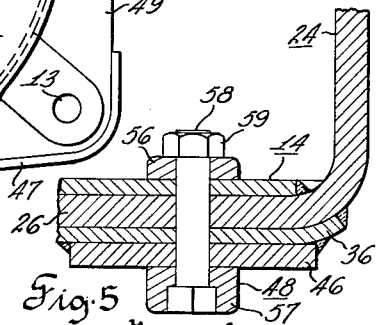


Fig. 5

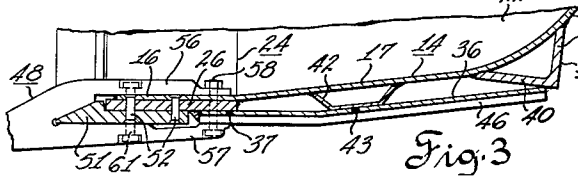


Fig. 3

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3,243,906

Patented Apr. 5, 1966

3,243,906

EXCAVATING BUCKET STRUCTURE

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Filed Oct. 14, 1963, Ser. No. 315,895
4 Claims. (Cl. 37—141)

This invention relates to an excavating bucket structure of the type used on tractor shovels and particularly relates to a heavy duty bucket construction of relatively light weight.

Bucket structures have heretofore been provided with wrap-around blades to increase the corner strength of the bucket, however, even greater strength of the bucket bottom anwd forward corners of the bucket is desired. It is therefore a primary object of my invention to provide the heavy duty bucket of superior strength.

It is a further object of my invention to provide an excavating bucket of rugged construction which is comprised of simple parts for ease of manufacturing and welding.

It is a further object of my invention to provide a heavy wrap-around plate at the front of the bucket for mounting the wrap-around cutting blade which not only provides good support for the cutting blade and good strength at the corners of the bucket but also absorbs the shock incurred in extreme working conditions such as loading rock.

It is a further object of my invention to provide a bucket bottom of superior strength which employs a core type construction wherein a heavy wrap-around plate for mounting the cutting blade serves as a spacer for vertically spaced bottom walls.

It is a further object of my invention to provide a heavy duty bucket construction employing a heavy duty wrap-around plate which has upstanding ends serving as forward continuations of the side walls of the bucket.

It is a further object of this invention to provide a heavy duty bucket structure wherein a heavy wrap-around plate is employed for mounting the cutting blade and for spacing the upper and lower bottom walls of the bucket and wherein a reinforcing tooth is mounted on the bucket in bridging relation to the space between the cutting blade and a longitudinally extending slide member having its forward end in backup relation to the cutting blade.

These and other objects and advantages of this invention will be apparent to those familiar with the art, upon reference to the following description and the accompanying drawings in which:

FIG. 1 is a side view of my bucket construction;

FIG. 2 is a section view taken along the line II—II in FIG. 1;

FIG. 3 is a section view of my bucket bottom taken along the line III—III in FIG. 2;

FIG. 4 is a section take along the line IV—IV in FIG. 1; and

FIG. 5 is a section view taken along the line V—V in FIG. 1.

Referring to FIGS. 1, 2 and 3 the illustrated embodiment of my invention is a heavy duty bucket structure **11** which is connected through pivot connections **12, 13** to a suitable support and adjustment linkage. My bucket structure includes a curved plate **15** presenting a bottom wall **14** having a flat forward section **16**, an upwardly sloping section **17**, and a curved portion **18** which forms the back wall of the bucket. The laterally oposite ends of the bottom wall **14** are secured by welding to transversely spaced side walls **21, 22.**

In order to provide additional strength in the bottom, the front corners and the front portion of the sides of my

bucket, I provide a relatively thick wrap-around plate **24.** Wrap-around plate **24** has a transversely extending flat portion **26** secured to and underlying the front portion **16** of the bottom wall **14.** The wrap-around plate **24** also has upstanding end portions **27, 28** which are butt welded at joints **29, 31** to the front edges of the side walls **21, 22,** respectively. Thus the upstanding end portions **27, 28** of my wrap-around plate **24** constitute front side wall portions of increased thickness and strength. The wrap-around plate **24** is of greater thickness than the bottom wall **14** and the side walls **21, 22.** I have found that by using presently known welding techniques, extremely strong butt weld joints can be provided between the rear end of the upstanding ends **27, 28** on the wrap-around plate **24** and the front ends of the side walls **21, 22.** The bucket side wall is further strengthened by a flat reinforcing plate **30** welded to the side wall **21** and to the rear edge of the upstanding portion **27** of wrap-around plate **24.** The opposite side of the bucket employs a similar construction. The wrap-around upstanding end portions **27, 28** are beveled at their top edges to produce tapered surfaces **32, 33** which constitute side cutting edges.

The wrap-around plate bottom portion **26** is welded at its front and rear to the bottom wall **14.** In order to provide superior strength in the bottom of my bucket, I provide a core construction which includes a subbottom wall **36.** The forward end of the subbottom wall **36** is welded to the rear part of wrap-around plate **24** and additionally the subbottom wall **36** is provided with slots **37** to permit plug welding to the wrap-around plate **24.** The rear end of subbottom wall **36** is welded to a transversely extending reinforcing member in the form of an angle **39** which serves to space the subbottom wall **36** from the bottom wall **14.** The flanges **40, 41** are welded to the underside of the bottom wall **14** and rear wall **18,** respectively. A transversely extending channel member **42** also serves to space the bottom wall **14** from the subbottom wall **36** and to lend strength to the bottom. The flanges of the channel **42** are welded to the underside of the bottom wall **14** and slots **43** are provided in the subbottom wall **36** to permit plug welding of the latter to the channel member **42.**

A plurality of wear strips or slides **46, 47** are welded to the subbottom wall **36** to take the wearing action that would otherwise be imposed on the subbottom wall. The slides **46, 47** also serve as reinforcing members for the bucket at the points where the excavating teeth **48** are installed. There are two slides **47** provided which extend rearwardly to a greater extent than slides **46.** These wrap around the lower end of bracket structures **49,** only one of which is shown.

A wrap-around cutting blade **51** is secured by a plurality of rivets **52** to the bottom wall **14** and to the bottom section **26** of the wrap-around plate **24.** As shown in FIG. 4, the upstanding sides of the blade **51** are secured to the upstanding end portions **27, 28** of the wrap-around plate **24** by rivets **53.** The slides **46, 47** terminate at their forward ends adjacent to the rear end of the blade **51** and are of a thickness so that when installed their bottom surface is at approximately the same level as the bottom surface of the wrap-around blade **51.** Thus the slides **46, 47** will not tend to catch or drag during excavation.

The reinforcing teeth **48** have top legs **56** and bottom legs **57** extending rearwardly sufficiently far to permit a rear fastening member in the form of bolt **58** to extend through the slide **46,** the subbottom wall **36,** the wrap-around plate **24** and the bottom wall **14.** Thus the gap between the rear end of the cutting blade **51** and the slides **46, 47,** and the subbottom wall **36** is bridged by the bottom legs of the teeth **48.** This serves to reinforce the bucket

bottom to an extent commensurate with the greater stresses to which it is subjected due to use of the cutting teeth. In addition to the rear fastening means, which includes bolts **58** and nuts **59**, front fastening means in the form of bolts **61** and nuts **62** are also provided to secure the legs **56**, **57** to the blade **51**, wrap-around plate **24** and the bottom wall **14**.

As shown in FIG. 1, the side wall **21** extends downwardly beyond the bottom wall **14** to be secured by welding to the subbottom wall **36**, thus completely enclosing the lower bottom structure and providing a smooth side face for the bucket. The opposite side of the bucket is similarly constructed.

Referring to FIG. 3, it will be noted that the wrap-around plate **24** serves not only to provide a strong heavy section forward end for the bucket but also as a spacer for the bottom and subbottom walls **14**, **36**. Additionally, as shown in FIGS. 1, 2 and 3, the subbottom wall **36** and slides **46**, **47** serve as backup means for the cutting blade **51**.

My bucket construction is made up of easily formed parts which are designed and arranged to make the most effective use of material used and to permit use of conventional welding equipment in manufacturing. This results in not only superior strength where needed to withstand heavy duty use, but also in relatively light weight. The wrap-around plate **24** extends all the way to the top of the sides of the bucket thus providing strong front side portions giving long life in excavating and rock loading operations. The flat section **26** of the plate **24** not only serves as a tough shock absorbing forward portion for the bucket bottom but also as a spacer for the longitudinally extending bottom and subbottom walls **14**, **36**, which together with channel **42** and angle **39** complete an exceptionally strong core bottom construction.

The embodiments of the invention for which an exclusive property or privilege is claimed are defined as follows:

1. An excavating bucket comprising:

a pair of spaced upstanding side walls;

a longitudinally extending bottom wall rigidly secured at its laterally opposite ends to the lower portions of said side walls;

a wrap-around plate having a transversely extending portion secured to and underlying the front portion of said bottom wall and including upstanding end portions having their rear edges butt welded, respectively, to the front edges of said side walls to form forward extending continuations of the latter;

a longitudinally extending subbottom wall having a forward portion underlying and secured to the rear part of said transversely extending portion of said wrap-around plate;

means vertically spacing the rear portion of said subbottom wall below said bottom wall and rigidly securing said subbottom wall to said bottom wall along its width,

and a wrap-around cutting blade connected to said bottom wall and wrap-around plate forwardly of said subbottom wall.

2. The structure set forth in claim **1** and further comprising a plurality of longitudinally extending and transversely spaced slides secured to said subbottom wall and each having a forward end terminating at the rear of said cutting blade, the bottom of said cutting blade being at least as low as the bottom of said forward ends of said slides.

3. The structure set forth in claim **2** and further comprising a plurality of laterally spaced teeth having upper and lower legs secured to said bucket in longitudinally bridging relation to the space between said blade and said slides.

4. The structure set forth in claim **1** wherein said wrap-around plate is of heavier section than said side walls.

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