

- [54] **EXCAVATOR BUCKET WITH DETACHABLE SIDE CUTTERS**
- [75] Inventor: **John Tarrant**, Southminster, England
- [73] Assignee: **Bofors (Great Britain) Co. Ltd., Bamsden Heath, Billericay, Essex, England**
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- [51] Int. Cl. **E02f 9/28**
- [58] Field of Search **37/141, 142, 118; 172/751**

2,259,456 10/1941 Crawford 37/142 R
3,685,177 8/1972 Hahn et al. 37/141 R

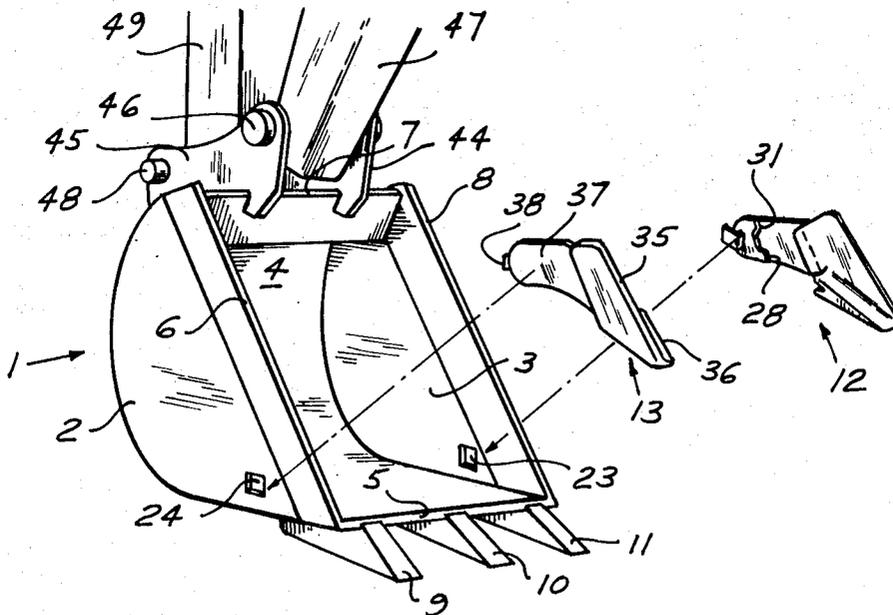
Primary Examiner—Robert E. Pulfrey
Assistant Examiner—Clifford D. Crowder
Attorney—Hane, Baxley & Spicens

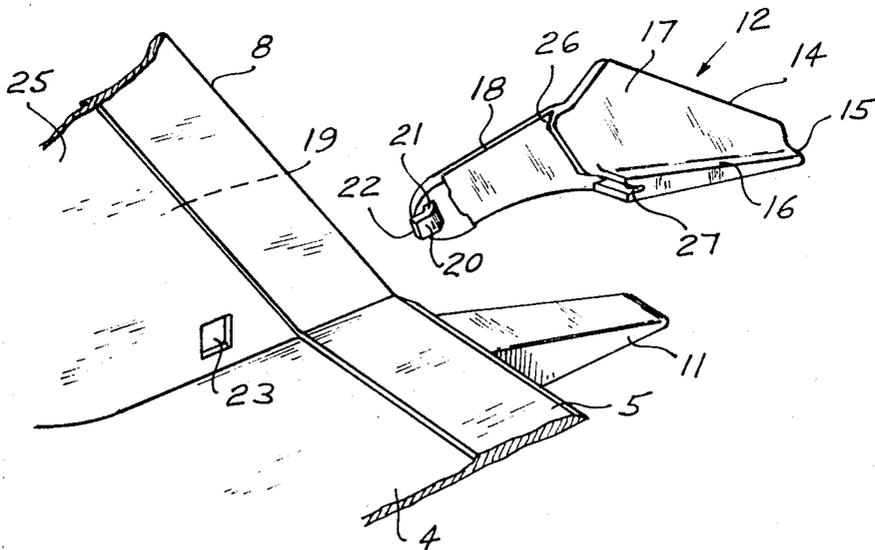
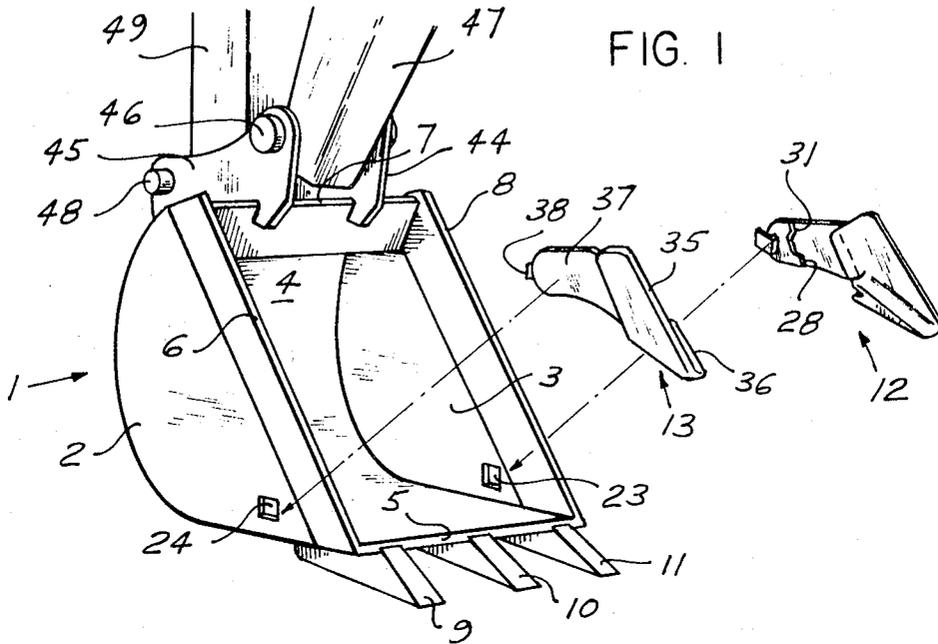
[57] **ABSTRACT**

An excavator bucket with two opposite side walls and an intermediate wall part which includes a forward lower edge of the bucket. A side cutter is releasably attachable to each of the side walls. Each of these cutters has a bracket which mounts at its free end fasteneing means arranged to co-act with complementary fasteneing means on the respective side wall of the bucket to locate the cutter on the bucket. Each cutter further has abutment means engageable with edge portions of the bucket to locate the forward part of the cutter. The bracket also carries an abutment disposed opposite an abutment on the respective side wall of the bucket. Wedges are insertable between the abutments on the bracket and the respective side wall to lock the side cutters in position.

- [56] **References Cited**
UNITED STATES PATENTS
- 1,716,432 6/1929 Downie 37/141 T
- 3,160,967 12/1964 Nichols 37/141 T
- 2,846,791 8/1958 Hosmer et al. 37/142 R

13 Claims, 6 Drawing Figures





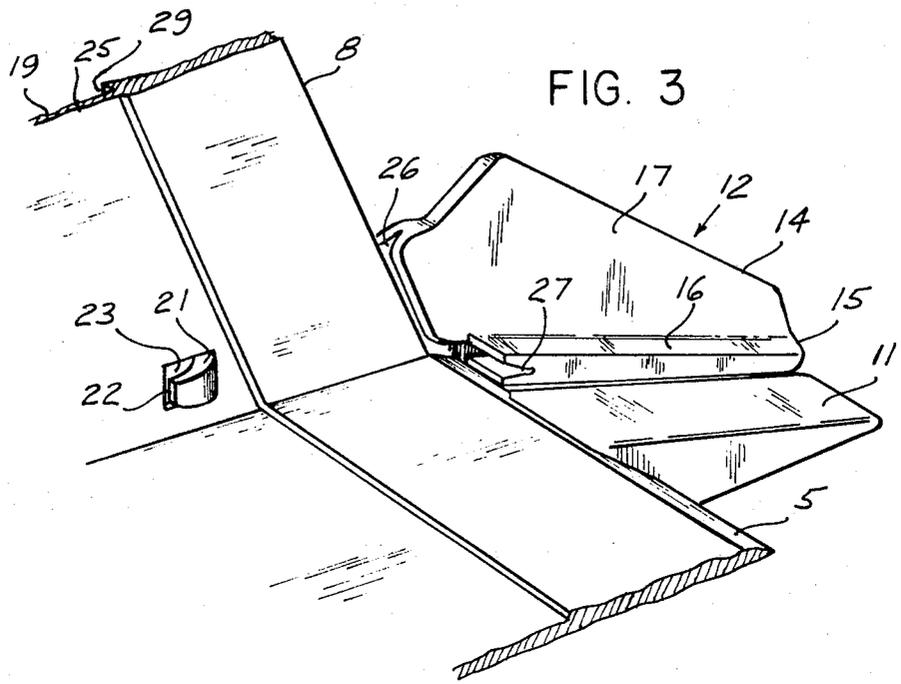


FIG. 3

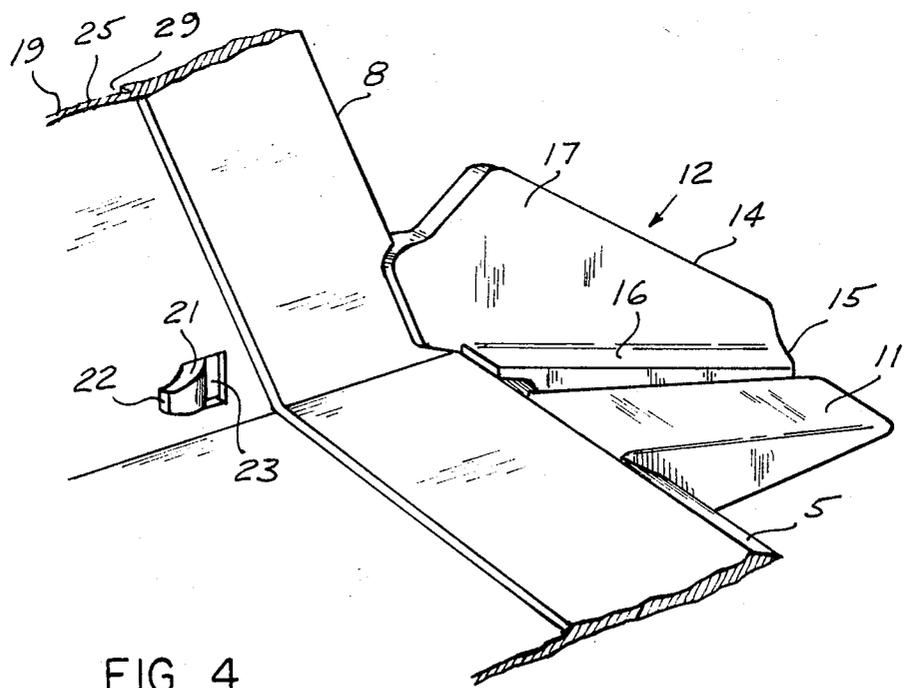


FIG. 4

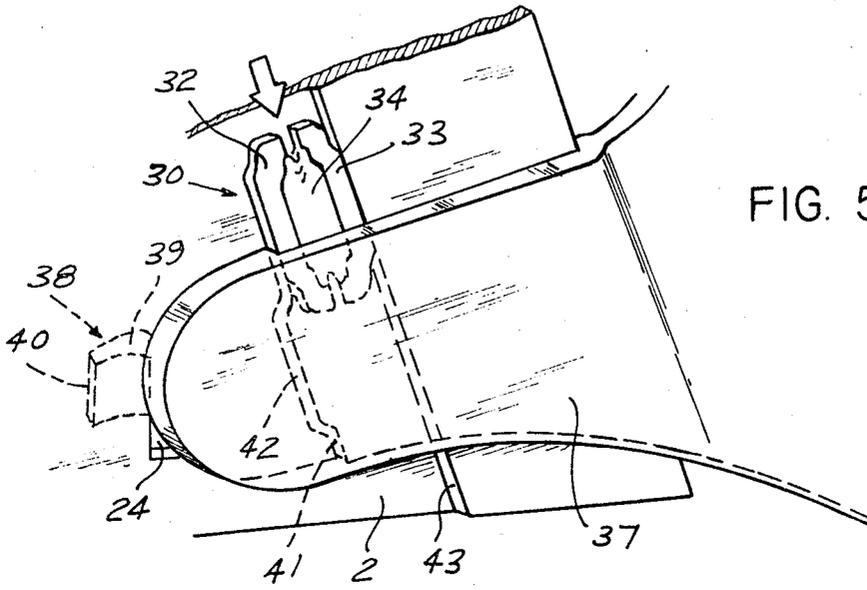


FIG. 5

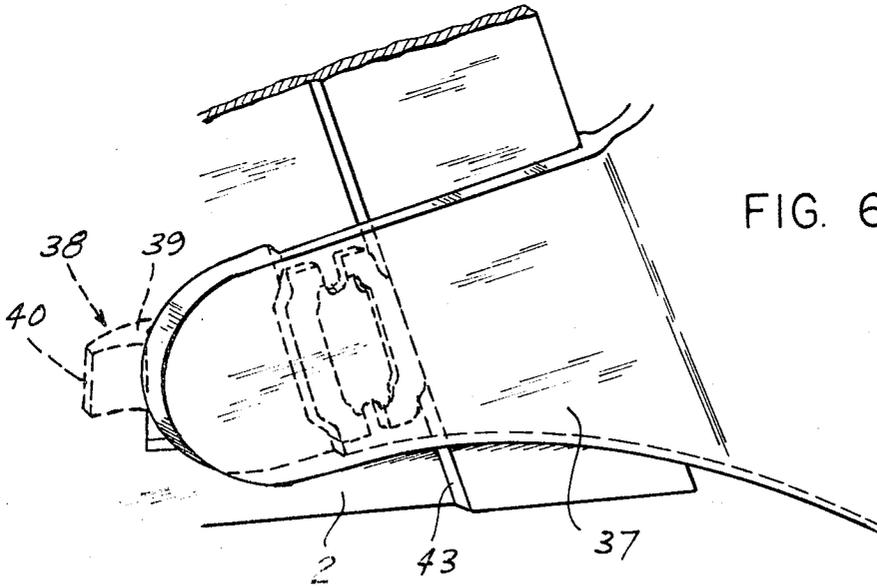


FIG. 6

EXCAVATOR BUCKET WITH DETACHABLE SIDE CUTTERS

The present invention relates to an excavator bucket which is provided with a side cutter on one or both of its side walls. Buckets of this kind are already known.

BACKGROUND

There is, however, a need for buckets provided with one or two side cutters which, when required, can easily be detached or attached. Because an excavator is usually rented at a high cost per hour, it is essential to be able to keep the time required for attaching and detaching the side cutters to a minimum.

THE INVENTION

An object of the present invention is to provide a bucket with a side cutter which can be attached or detached in unusually short time. According to the present invention, an excavator bucket has two opposite side walls, an intermediate wall part which presents a front lower edge of the bucket, and at least one side cutter adapted to be readily attached to and detached from a respective one of the side walls, the or each side cutter being provided with an arm which extends rearwardly (i.e. away from the cutting portion of the side cutter and towards the rear of the bucket) and which carries at its rear end a formation engageable with a complementary formation of the respective side wall to locate the rear of the arm relative to the bucket, the side cutter also having formations adapted to engage edge portions of the bucket to locate the front portion of the cutter, and the arm carrying an abutment arranged to lie opposite an abutment on the side wall of the bucket, a wedge being insertable between the abutments to secure the side cutter in position.

According to a favorable embodiment of the invention, the wedge is compressible and expansible transversely. Owing to these properties of the wedge, a squeezing effect is obtained.

The wedge is appropriately composed of three units. All three units are arranged longitudinally. The outer units are made of a hard material, e.g. metal or plastic. The intermediate unit is made of a flexible material, e.g. rubber or plastic.

The edge on the lower side of the arm can be made with a recess, to constitute a locking pocket for the wedge. The wedge should then have a protuberant part corresponding to the recess.

BRIEF DESCRIPTION OF THE DRAWINGS

A specific embodiment of the present invention will now be described by way of example and with reference to the accompanying drawings, in which:

FIG. 1 shows an excavator bucket with two side cutters, intended to be attached to the bucket,

FIG. 2 shows only the lower right-hand side of the bucket, with a side cutter being inserted.

FIGS. 3 and 4 show two further stages of the fastening of said side cutters, and

FIGS. 5 and 6 show how a wedge is fastened to a cutter, to secure it to the bucket. (For clarity only the wedging of the left side cutter is shown).

DETAILED DESCRIPTION OF THE DRAWING FIGURES

Referring now to the figures in detail, there is shown an excavator bucket 1 which has two side walls 2 and

3. Between the side walls, an intermediate part 4 is arranged, which forms the front edge, the bottom and the rear wall of the bucket. The edges of the opening of the bucket are referenced 5,6,7 and 8. The edges of the opening are reinforced by metal strips extending round the opening. The front edge 5 of the opening is a cutting edge and is provided for the purpose with three digger teeth 9,10 and 11. At its rear upper end, the bucket has two lugs 44 and 45. These two lugs are parallel with each other, as will be noted from FIG. 1, and are provided with two fulcrum pins 46 and 48 extending through the lugs. The free end of an arm or bracket 47 which serves to raise and lower the bucket, is rotatably supported on the pin 46. The arm 47 is mounted on an excavator (not shown). Another arm 49 is rotatably supported on the pin 48. The arm 49 is mounted on a hydraulic member (not shown), and serves to turn the bucket about the pin 48.

The side walls 2 and 3 of the bucket each have a through hole or aperture 23 and 24, respectively. Two side cutters 12 and 13 coact with the bucket. The side cutter 12 is intended for attachment to the right-hand side of the bucket, and the side cutter 13 is for attachment to the left-hand side. The two side cutters are identical, but are reversed, that is, mirror images of one another. Only the side cutter 12 will therefore be described in detail. It has two cutting edges 14 and 15. The cutting edge 14 is arranged on a vertical wall 17, and the cutting edge 15 on a horizontal wall 16. An arm or bracket 18 is directed rearwards, that is, away from the cutting edges 14 and 15. It is intended to be in contact with the outer surface 19 of the side wall 3. At its free end, the arm has a bent finger 20, consisting of an inner part 21 at right angles to the arm 18 and an outer part 22 parallel thereto. The finger 20 is intended to be inserted through the hole 23, and the part 22 is intended to be in contact with the inner surface 25 of the side wall 3. At the rear end of the wall 17, the cutter 12 is formed with a rearward-facing channel 26. At the rear end of the wall 16, the cutter also has a rearward-facing channel 27. These two channels have straight bottoms, and are intended to receive the side edge 8 and the front edge 5, respectively, of the bucket 1. Said edges can have a form deviating from a straight form, and the bottoms of the channels 26 and 27 must then be shaped accordingly.

On its inner side the arm 18 has a shoulder or abutment 28, which is provided with a recess 31. The shoulder 28 is intended to coact with a shoulder or abutment 29 which is formed on the outer surface 19 of the side wall 3, e.g. by the edge of the reinforcing strip. The shoulder 28 is intended to lie opposite and parallel with the shoulder 29. Between these two shoulders or abutments, a wedge 30 is intended to be inserted. This wedge consists of two outer members 32 and 33, preferably made of metal and an intermediate member 34, made of flexible material, for instance, rubber or a plastics material. The two outer members 32 and 33 of the wedge are each made with a protuberant section, corresponding to the recess 31 in the shoulder 28 on the inner side of the arm.

In FIGS. 5 and 6 the rearwardly directed arm or bracket of the left-hand side cutter 13 is referenced 37 and the bent finger is referenced 38, and the two parts of the finger have the references 39 and 40. The shoulder on the inner side of the arm 37 is referenced 41, and the recess in said shoulder has the reference 42.

The shoulder or abutment on the side wall 2 opposite the shoulder 41 is referenced 43.

Attachment of a side cutter will now be described. Referring to FIG. 1, it will be seen that the side cutter 12 is moved towards the bucket 1 with its arm 18 directed towards the bucket, in the direction of the hole 23, as indicated by the arrow. In FIG. 2 the cutter has come closer to the bucket, and in FIG. 3 the finger 20 has been inserted into the hole 23. In this situation the channel 26 and the channel 27 are juxtaposed to the side edge 8 and the front edge 5 respectively. If the cutter is now moved farther towards the rear of the bucket the said two edges will enter into the two channels. The side cutter is then positioned laterally and the part 22 of the finger 20 is in contact with the inner surface 25 of the side wall 3. However, the cutter 12 can still move back and forth in the longitudinal direction of the bucket. In order to prevent this, the wedge 30 is inserted between the shoulder 28 and the shoulder 29.

FIGS. 5 and 6, which illustrate the wedging of the left-hand cutter, show more clearly how the wedge is inserted. FIG. 5 shows how the wedge is knocked down in the direction indicated by the arrow. Because of the resiliently compressible member 34, the wedge can be squeezed in. During the course of its further movement downwards, the wedge comes to the position where its protuberant part coincides with the recess 42 and it can expand again. The side cutter is now firmly secured.

If it be desired to remove the attached side cutter, all that need be done is to knock out the wedge, using a suitable tool, and this can be done in a very short time, after which the cutter can easily be lifted off the bucket.

While the invention has been described in detail with respect to a certain now preferred example and embodiment of the invention, it will be understood by those skilled in the art, after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention, and it is intended, therefore, to cover all such changes and modifications in the appended claims.

What is claimed is:

1. An excavator bucket comprising:
 - two side walls and an intermediate wall part joining the side walls, one edge portion of said intermediate wall part constituting the forward edge of the bucket;
 - at least one side cutter releasably attached to one of said side walls;
 - fastening means on the cutter and on a side wall of the bucket, said fastening means including a bracket secured at one end to the cutter at a slant toward the end of the bucket opposite the said forward edge, the other end of the bracket mounting engagement means engaged with complementary receiving means on said side wall;
 - locating means including a first abutment means on the cutter in abutting engagement with edge por-

tions of bucket walls to locate the forward portion of the cutter and a second abutment means on said bracket abutting against the respective side wall of the bucket to locate the cutter relative to the bucket; a shoulder formed on the outer surface of the respective side wall of the bucket; and wedge means releasably inserted between said second abutment means and said shoulder to lock the cutter in its position relative to the bucket.

2. The excavator bucket according to claim 1 wherein the abutment means on said bracket comprises a shoulder having a recess between its ends to accommodate said wedge means.

3. The excavator bucket according to claim 2 wherein said wedge means has a protruding portion fitting the recess in the shoulder.

4. The excavator bucket according to claim 1 wherein said wedge means includes components resiliently compressible in transverse direction.

5. The excavator bucket according to claim 4 wherein said wedge comprises three longitudinally extending and side by side disposed members, the two outer ones of said members being made of rigid material and the intermediate member being made of resilient compressible material.

6. The excavator bucket according to claim 1 wherein the engagement means at said other end of the bracket comprise a bent finger and the complementary receiving means on the respective side wall of the bucket comprise an opening through which said finger engages the opposite surfaces of said side wall.

7. The excavator bucket according to claim 1 wherein said cutter includes channeled wall portions engaged with said edge portions of the bucket walls.

8. The excavator bucket according to claim 1 wherein said edge portions in engagement with said first abutment means are part of the edge of the respective side wall of the bucket and part of the forward edge.

9. The excavator bucket according to claim 1 wherein said bracket of the side cutter when attached to the respective side wall abuts against the outer surface of said side wall.

10. The excavator bucket according to claim 1 wherein said shoulder extends substantially at a right angle from the side of the bracket facing the respective side wall and transversely to the length of the bracket.

11. The excavator bucket according to claim 1 wherein said shoulder is formed by an edge of a reinforcing strip extending about the filling opening of the bucket.

12. The excavator bucket according to claim 1 wherein said forward lower edge of the bucket is a cutting edge, and at least one digger tooth is secured to said edge protruding therefrom.

13. The excavator bucket according to claim 1 wherein said intermediate wall part includes a bottom wall and a rear wall of the bucket.

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