April 28, 1964 A. J. KELLY 3,130,843

EXCAVATORS

Filed May 23, 1962 4 Sheets-Sheet 1

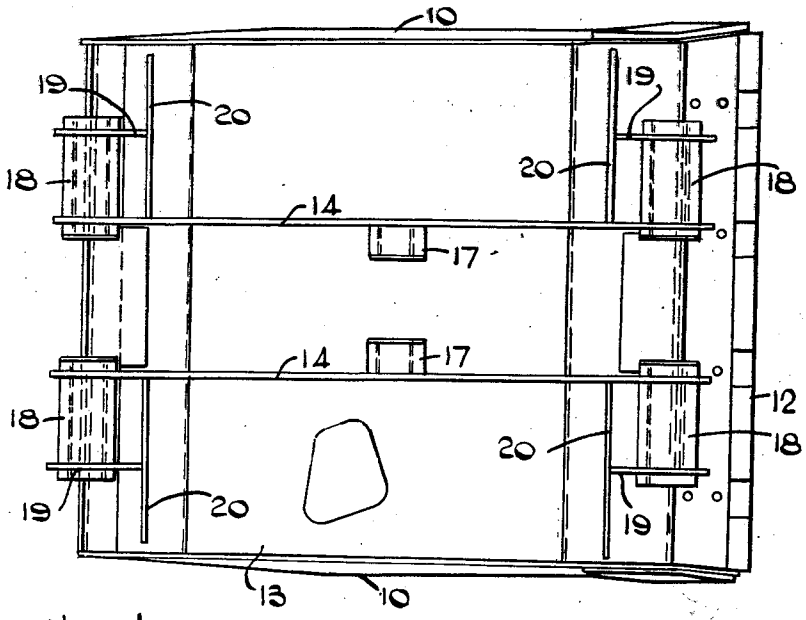


Fig. 1.

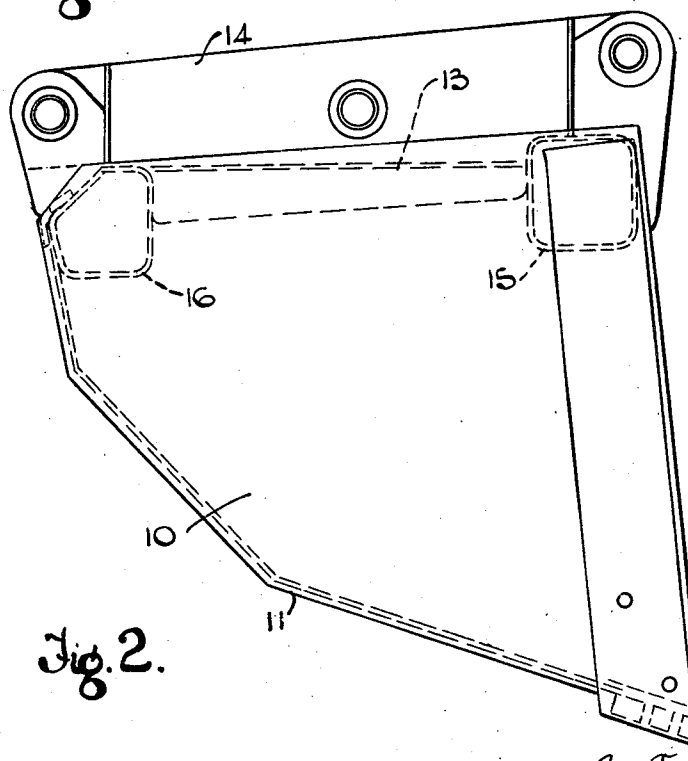


Fig. 2.

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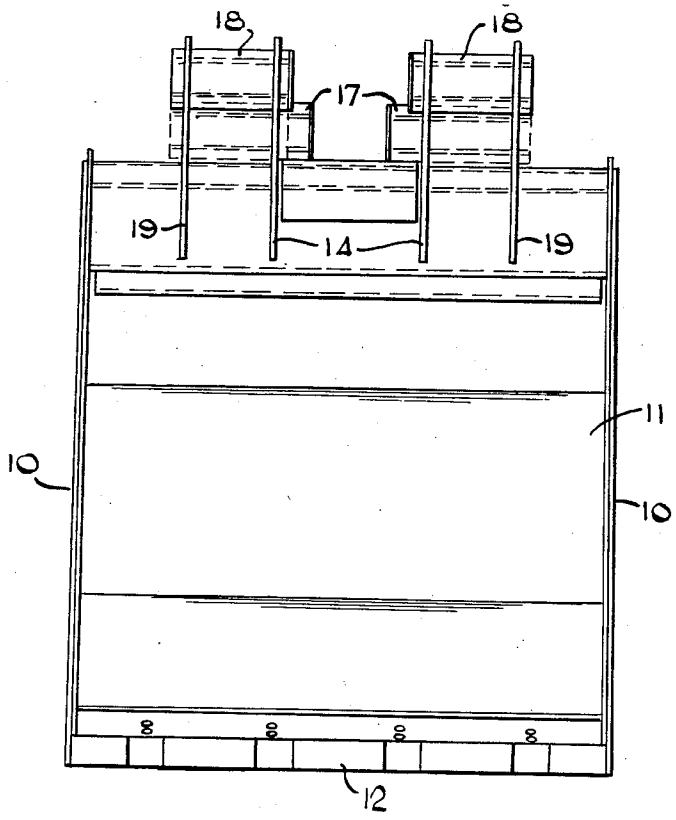


Fig. 3.

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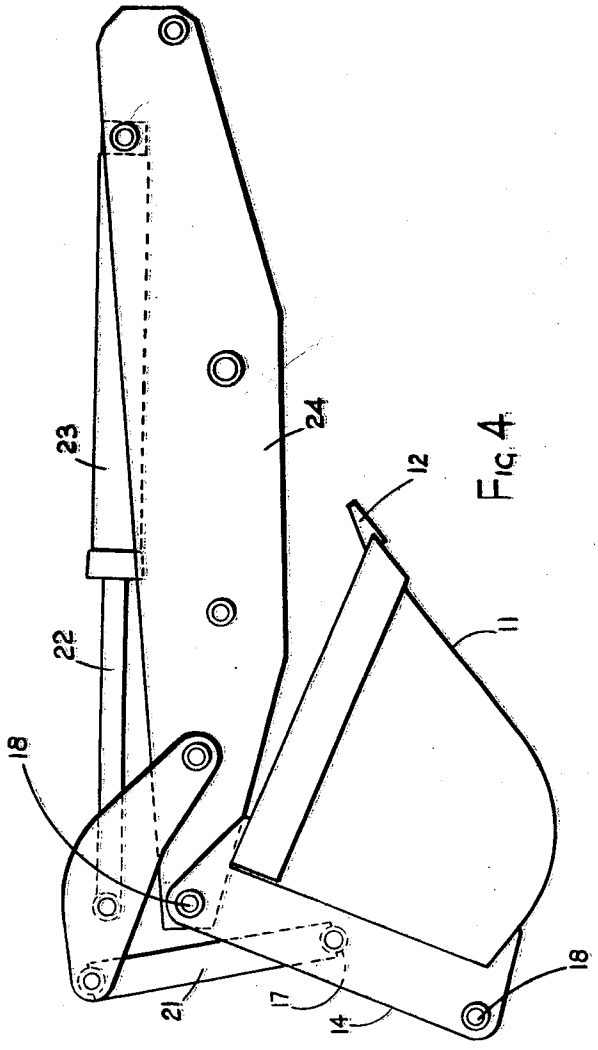


FIG. 4

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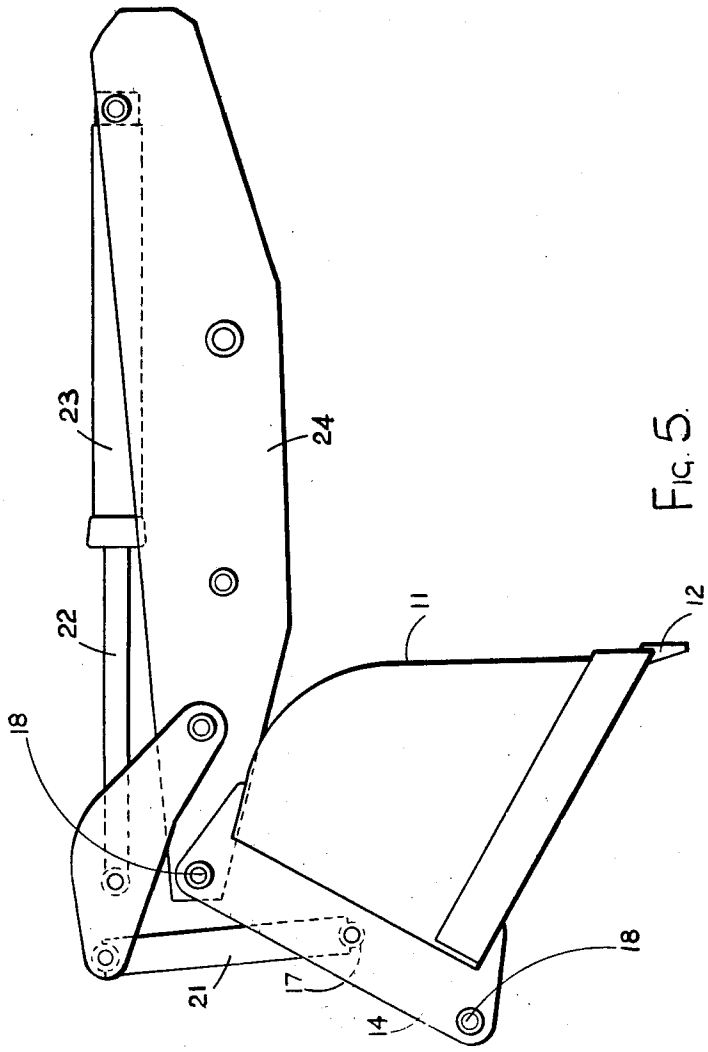


FIG. 5

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United States Patent Office 3,130,843 Patented Apr. 28, 1964

3,130,843

EXCAVATORS

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Filed May 23, 1962, Ser. No. 196,930
2 Claims. (Cl. 214—145)

This invention relates to mechanical excavators of the type in which a tool arm is mounted to pivot about a horizontal axis and on its outer end is pivotally connected a bucket which can also pivot about a horizontal axis, there being mounted upon the tool arm, a hydraulically operated ram which is connected pivotally to the bucket to cause pivotal movement thereof relatively to the tool arm.

Such mechanical excavators are generally mounted upon the front or rear of a tractor for operation from the tractor and the tool arm is generally carried at the end of a boom which can be raised and lowered and which can also be swung from side-to-side.

There are two classes of excavating buckets in use at present and in referring to these, the references to the forward direction means the direction away from the tractor and the rearward direction means the direction towards the tractor. The two classes of buckets comprise on the one hand, a digging bucket in which the open mouth faces in the rearward direction and is generally used for trenching with a scooping action and a face bucket in which the open mouth faces in the forward direction and, as its name applies, operates upon the face of the excavation or upon a pile of material.

The object of the present invention is to provide an improved form of bucket which can be used as a digging bucket or as a face bucket.

According to the present invention I provide an excavating bucket for the purpose specified, such bucket having spaced side walls and a top wall extending between the upper edges of the side walls, the top wall having mounted therein intermediate its front and rear ends, a pivotal mounting for connection to the operating ram and two alternative pivotal mountings for the end of the tool arm, one being at or near the front end and the other being at or near the rear end of the top wall.

With this arrangement, the bucket can be made to operate as a face bucket or as a digging bucket depending upon which of the two alternative pivotal mountings is selected for connecting the bucket to the end of the tool arm as it will be appreciated that with one mounting in use, the bucket will have its open mouth facing forwardly and with the other mounting in use the open mouth of the bucket will be facing rearwardly whilst in both cases, the pivotal connection between the hydraulic ram and the bucket remains the same. Therefore, by means of a simple change-over operation, the bucket can be converted from use as a digging bucket to use as a face bucket and vice versa.

The invention is illustrated, by way of example, in the accompanying drawings wherein:

FIGURE 1 is a plan view,

FIGURE 2 is a side elevation.

FIGURE 3 is an end view looking from the right in FIGURE 1.

FIGURES 4 and 5 show the two alternative positions of the bucket as mounted on the tool arm of an excavator.

The dual purpose bucket shown in the drawings has its main body formed to generally known configuration having spaced side walls **10** and a base **11** which consists of three integral sections of wall connected together at obtuse angles, the end of the base at the open mouth

of the bucket being provided with the usual form of toe plate **12**.

The top wall **13** of the bucket has welded thereto, two main longitudinal webs **14** extending in spaced parallel relationship from front to rear of the top wall over the central region thereof and at front and rear there are transversely extending box section members **15** and **16** welded to the top wall **13** and to the side walls **10**.

At approximately the centre point of each longitudinal web **14**, there is fixed on the inner face of the web, a collar **17** which constitutes one side of the pivotal mounting for the connection **21** between the bucket and the end of the piston rod **22** extending from the hydraulic ram **23** which is mounted on the tool arm **24** for the purpose of operating the bucket so that when the bucket is connected in position, this connection **21** from the end of the piston rod goes between the two collars **17** which are secured to the two main longitudinal webs **14** and is connected thereto by a suitable pivot pin.

The pivotal connection for the tool arm at each end of the top wall **13** is of substantially the same form at each edge and therefore like reference numerals are used to describe these hereinafter.

Near its end, each main longitudinal web **14** has mounted therein, a sleeve member **18** which extends outwardly at right angles to the plane of the web, the outer end of the sleeve **18** being mounted in a short upright web **19** secured to the top wall **13** of the bucket with its end remote from the adjacent end of the top wall being secured to a further web **20** which extends from the main longitudinal web **14** and terminates just short of the adjacent side wall **10**.

The aforesaid sleeve **18** constitutes one side of the pivotal mounting for the end of the tool arm and a similar sleeve **18** extends from the other main longitudinal web **14** and is similarly supported by further webs **19** and **20** thereby constituting the other half of the pivotal connection.

When the bucket is mounted in position, the end of the tool arm is located between the inner ends of the two sleeve **18** and is pivotally secured by means of a suitable pivot pin passing through the two sleeves and the end of the tool arm; depending upon the use to which the bucket is to be put, this connection is made to the pair of sleeves **18** at the front or the pair of sleeves at the rear.

The alternative positions of the bucket are illustrated in FIGURES 4 and 5.

What I claim is:

1. A reversible excavating bucket for a mechanical excavator of the type specified comprising spaced side walls, a top wall extending between the upper edges of the side walls, a pair of spaced apart upright main webs extending longitudinally over the intermediate region of the top wall from end-to-end thereof, an inwardly projecting collar secured to the inner face of each main web at the centre portion thereof so as to have said collars in axial alignment, two sleeve members mounted in each main web, one at each end thereof, each sleeve member being secured at its one end in the associated main web and extending outwardly from the main web so as to have the two sleeve members at each pair of ends of the main webs in axial alignment, further upright webs secured to the top wall and the outer ends of said sleeve members being secured in said further upright webs.

2. A reversible excavating bucket for a mechanical excavator of the type specified comprising spaced side walls, a top wall extending between the upper edges of the side walls, a pair of spaced apart upright main webs extending longitudinally over the intermediate region of the top wall from end-to-end thereof, an inwardly pro-

jecting collar secured to the inner face of each main web at the centre portion thereof so as to have said collars in axial alignment, two sleeve members mounted in each main web, one at each end thereof, each sleeve member being secured at its one end in the associated main web and extending outwardly from the main web so as to have the two sleeve members at each pair of ends of the main webs in axial alignment, an upright web secured to the top wall adjacent each end of each main web and in spaced parallel relationship to the adjacent main web on the outer side thereof, a transverse web secured to each such upright web and secured to the adjacent main web and the outer end of each sleeve member being secured in its associated one of said upright webs.

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