

[72] Inventor **Gabriel L. Guinot**
Le Plessis-Belleville, France
 [21] Appl. No. **769,125**
 [22] Filed **Oct. 21, 1968**
 [45] Patented **Apr. 20, 1971**
 [73] Assignee **Societe Anonyme Poclain**
Oise, France
 [32] Priority **Nov. 13, 1967**
 [33] **France**
 [31] **127,920**

[56]

References Cited

UNITED STATES PATENTS

2,790,568	4/1957	Mandt.....	214/132
3,231,114	1/1966	Le Tourneau.....	214/132
3,241,693	3/1966	Stroker.....	214/132X
3,484,005	12/1969	Guinot	214/140X

Primary Examiner—Gerald M. Forlenza

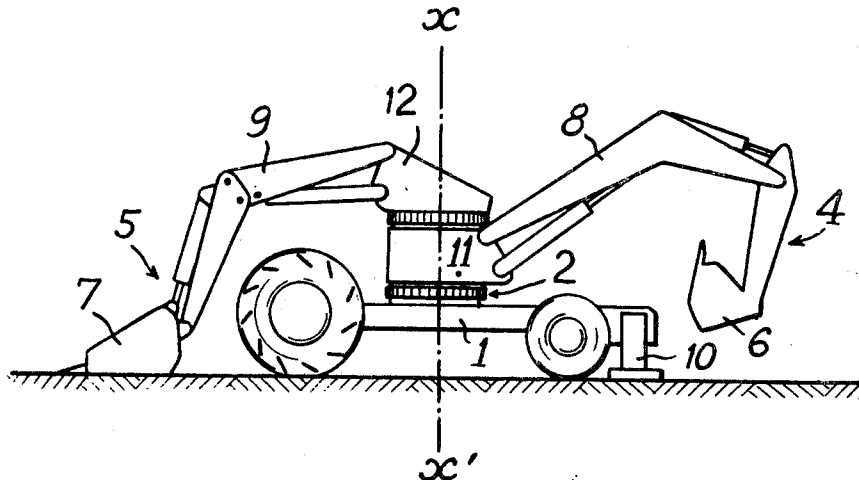
Assistant Examiner—Lawrence Oresky

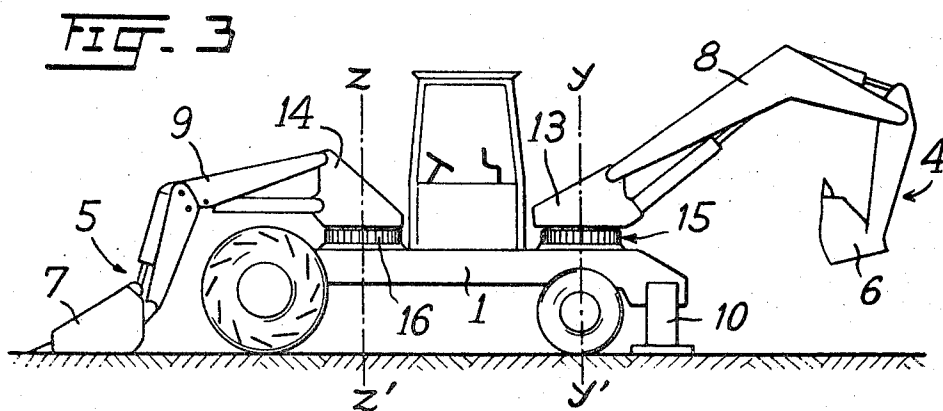
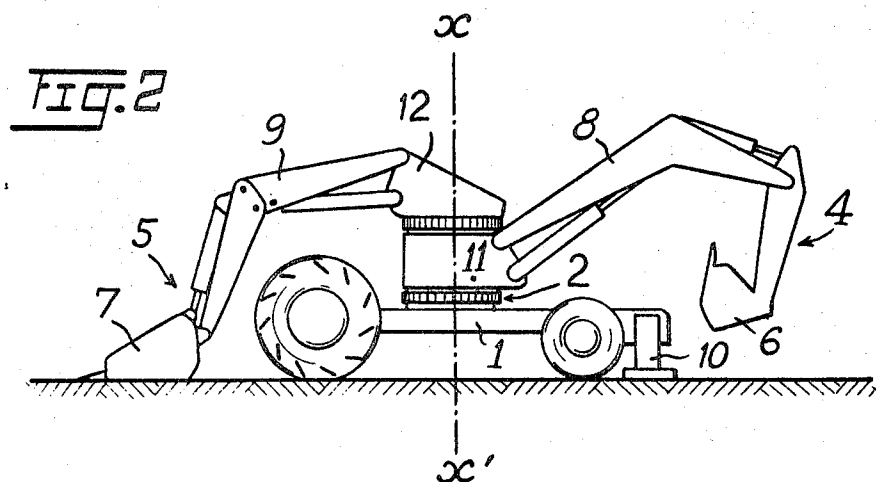
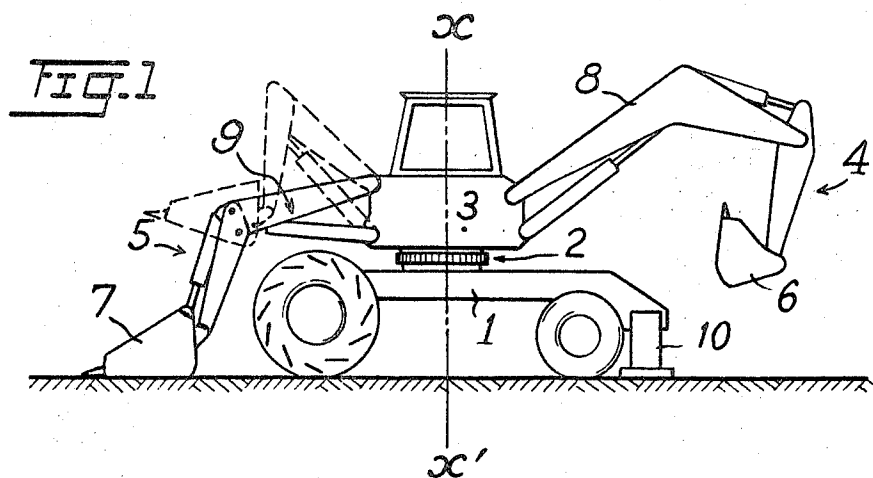
Attorney—Mason, Fenwick & Lawrence

[54] **EARTHWORKING MACHINES**
3 Claims, 3 Drawing Figs.

[52] U.S. Cl..... **214/138**
 [51] Int. Cl..... **E02f 3/75**
 [50] Field of Search..... **214/140,**
132, 133, 134, 135, 136, 137, 138; 37/117.5

ABSTRACT: An earthworking machine with at least two beams supporting selected earthworking implements. The beams are mounted on the chassis and adapted to rotate. Actuating means are provided for the beams and earthworking implements.





INVENTOR

GABRIEL L. GUINOT

BY
Mason, Fenwick & Lawrence
ATTORNEYS

EARTHWORKING MACHINES

This invention relates to earthworking machines. Agricultural tractors are already known, which have on a single chassis a loading equipment at the front, and, at the rear a "retro" equipment, i.e. one in which the line of operation of the digging tool is towards the vehicle. It should be understood that the term "equipments" refers to earthworking implements and the devices for operating such devices including beams, jacks, buckets and the like adapted to be used on the tractor in order to perform a given working operation. In fact, these machines comprise two absolutely independent pieces of equipment and, particularly in the case of the above example, are not flexible in operation.

A main object of the invention is to provide a multiequipment earthworking machine of great maneuverability, being very easily adaptable to various working conditions, particularly as regards the kinds of work and the types of terrain worked upon.

According to the invention, an earthworking machine comprises at least two equipments as defined above mounted respectively at the ends of corresponding beams, the beams themselves being mounted on at least one turret pivotable about a pivot fixed to a single chassis. The equipment used may be for example a loader-leveller, a "retro" bucket, grab, etc.

In order that the invention may be more fully understood, some embodiments in accordance therewith will now be described, by way of example, with reference to the accompanying drawings, in which:

FIG. 1 is a side elevation of one embodiment of an earthworking machine of the invention;

FIG. 2 is an alternative embodiment of the machine of the invention; and

FIG. 3 is a further embodiment of the machine of the invention.

Referring to the drawings, FIG. 1 shows an earthworking machine of the invention comprising a single self-propelled chassis 1 carrying a pivot 2 on which pivots a turret 3 carrying two equipments 4 and 5 and having means for rotating the turret and stopping rotation thereof (not shown).

One of the equipments 4 comprises, for example, a "retro" bucket 6 and the other equipment 5 comprises a loader-leveller bucket 7. These two equipments are mounted respectively at the ends of beams 8 and 9 fixed to the turret 3 and preferably substantially symmetrical with respect to the axis $x'x$ of the pivot 2. The two beams 8 and 9 thus move in a single vertical plane which contains the axis $x'x$ of the pivot 2 and can pivot simultaneously about this axis.

One of the advantages of this arrangement, over and above the rapidity with which an operator can change from one equipment to the other and back again, is that the equipments 4 and 5 each constitute a counterweight for the other which is automatically established in the vertical working plane of the equipment concerned. This counterweight is adjustable in reach by manipulating the beam, for example, (8 or 9) and in load by filling to a greater or lesser extent the bucket 6 or 7.

When it is used as a counterweight, the equipment 5 is preferably retracted completely as shown in dotted lines, the bucket 7 being suitably filled. The swing and the area through which this equipment sweeps is thus reduced. This counterweight can thus be rapidly and accurately weighted and the machine balanced.

In accordance with another advantage of this machine, one of the equipments (the equipment 5 for example) can bear on the ground (as shown in FIG. 1) and thus ensure, by stopping movement of the turret 3, in conjunction with the usual feet 10, an increase in adherence and stability of the machine when the equipment 4 is working. This additional support can also enable the equipment 4 to exert its maximum force on the ground, whatever may be the orientation of the turret 3.

Finally, by applying the two equipments 4 and 5 to the ground simultaneously, the chassis 1 of the machine can be raised in order, for example, to free it and orientate it in

another direction.

Moreover, this arrangement can be modified by providing other equipments on beams mounted on the turret 3 and preferably distributed symmetrically with respect to the axis $x'x$. As was seen above, when one of these equipments is operating, the others are used as counterweights which may or may not be variable, or as additional support or locking members for the turret or the machine.

FIG. 2 shows an alternative embodiment of the invention, in which the two beams 8 and 9 carrying the equipments 4 and 5 are mounted on two independent turrets 11 and 12, which are themselves both mounted on the pivot 2. Means (not shown) are provided to drive the two turrets 11 and 12 in rotation independently of each other and, if necessary, to lock one with respect to the other. This embodiment offers the same advantages as the machine shown in FIG. 1 and provides greater flexibility, particularly as regards the stability of the machine.

Thus, on difficult terrain the equipment 5, for example, can bear on the ground according to the irregularities, the inclination or makeup of the terrain, independently of the zone of operation of the equipment 4, in order to ensure a firm stance for the machine. This equipment 5 can also constitute a counterweight for the equipment 4.

By locking the turret 12 with respect to the turret 11, particularly so that the equipments 4 and 5 are substantially symmetrical with respect to the axis $x'x$, there is obtained the machine of FIG. 1. Moreover, should the machine become stuck, it is also easy by means of the equipments 4 and 5 to exert pressure on the ground so as to partially or completely lift the chassis and orientate it in another direction.

FIG. 3 shows another embodiment of the machine of the invention which is similar to that shown in FIG. 2. The two equipments 4 and 5 of the machine are pivotally mounted independently of each other, the two corresponding turrets 13 and 14 being mounted on two separate pivots 15 and 16 fixed to the chassis 1. The axes $y'y$ and $z'z$ of the pivots 15 and 16 are distributed so as to ensure stable balancing and a solid stance for the machine during work carried out by one or other of the equipments.

This arrangement not only has the advantages of the embodiment of FIG. 2, but also has better stability than the latter. The axes $y'y$ and $z'z$, which are shown here in the medial longitudinal plane of the chassis 1, could of course be in any plane. Moreover, in the embodiment of FIG. 3, when the turrets 13 and 14 are coupled, i.e. when any displacement of one causes displacement of the other in the same direction of rotation, this is practically the equivalent of the machine of FIG. 1 as regards the mutual balancing of the equipments.

I claim:

1. An earthworking machine comprising a chassis, a first turret mounted for rotation about an axis of rotation on said chassis, a first beam means having one end connected to said first turret and extending from said first turret, an earthworking implement mounted on the end of said first beam means opposite the end of said beam connected to said first turret, a second turret mounted for rotation on said chassis coaxially with said first turret, a second beam means having one end connected to said second turret and extending from said second turret and a second earthworking implement mounted on the end of said second beam means opposite the connection of said second beam to said second turret whereby either of said earthworking implements is usable as a counterweight to the other earthworking implements during operation of the other earthworking implement of the machine.

2. The invention of claim 1 wherein said axis of rotation of said first and second turret is positioned intermediate the ends of said chassis.

3. The invention of claim 2 wherein said first turret and said second turret are adjacent each other in vertical alignment and said axis of rotation is a vertical axis.