

# United States Patent

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[31]		154261

[56] .

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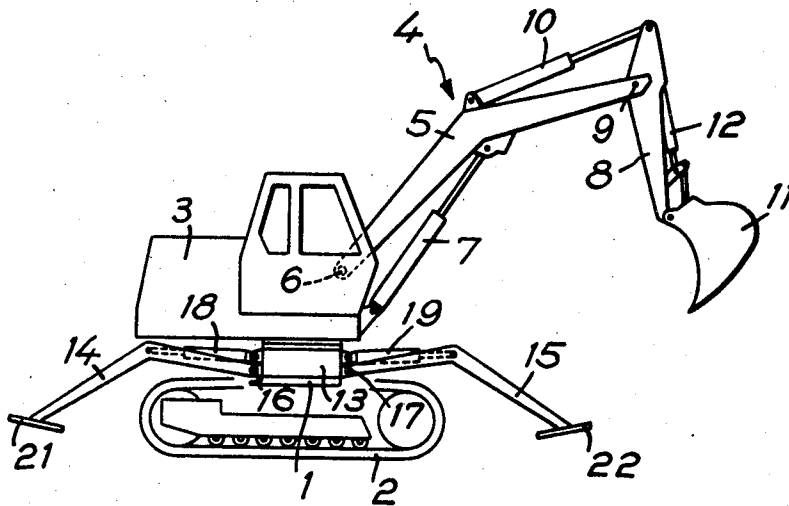
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**[54] MECHANICAL EXCAVATOR OR OTHER EARTH  
WORKING MACHINE**  
**4 Claims, 5 Drawing Figs.**

[52] **U.S. Cl.**..... 214/138,  
37/103, 212/145  
[51] **Int. Cl.**..... B66c 23/78  
[50] **Field of Search**..... 214/138,  
132-137; 212/145; 37/103, 117.5; 280/80.5;  
188/7

**ABSTRACT:** This invention consists in providing a mechanical excavator or other earth working machine having a rotary implement carrying turret with stabilizing legs mounted on a support which is rotatably mounted on the machine about an axis coaxial with the turret so that said stabilizing legs can be swung to an inoperative position fore and aft of the machine or an operative position in which they extend laterally of the machine.



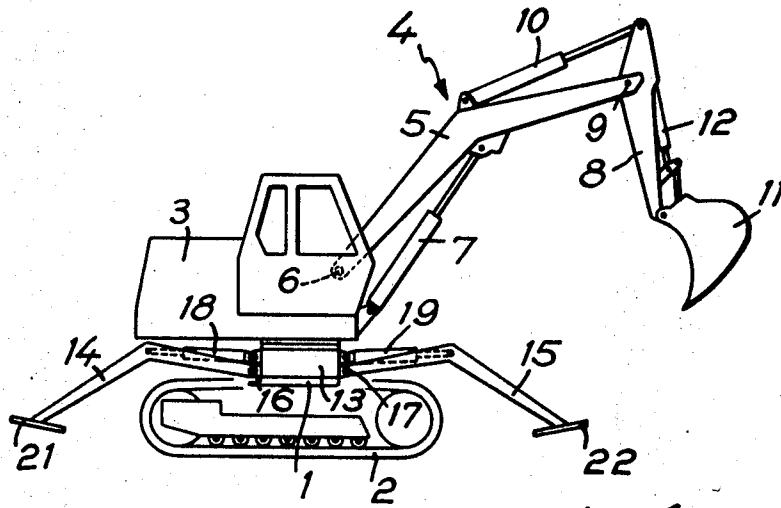


Fig. 1

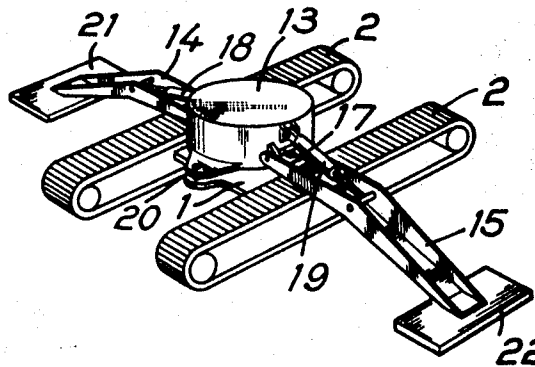


Fig. 2

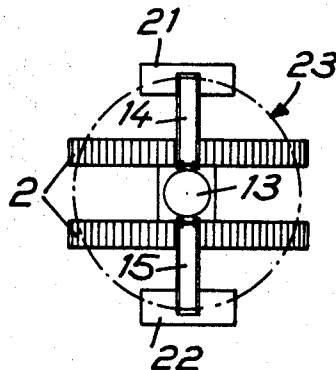


Fig. 3

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Fig. 4

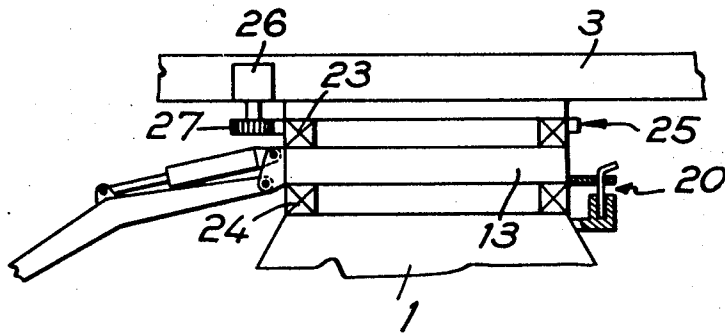
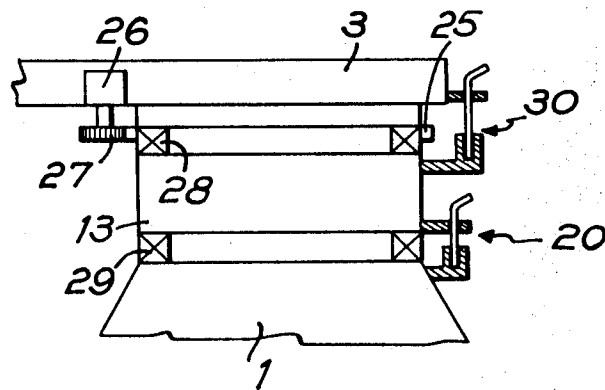


Fig. 5



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# MECHANICAL EXCAVATOR OR OTHER EARTH WORKING MACHINE

This invention relates to earth-working machines, such as mechanical excavators, mechanical loaders and the like, having an earth working implement such as a bucket, shovel, scoop or the like mounted on an arm or jib pivotally mounted on a rotary turret.

Earth-working machines of this kind are frequently provided with stabilizing means, such as stabilizing legs, which are adapted to be moved into contact with the ground in order to stabilize the machine while earth-working operations are being carried out. In the known arrangement the stabilizing legs, or other stabilizing means, are positioned on the machine so as to provide optimum effect while the earth working machine is in use but this sometimes presents problems when the machine has to be driven from one side to another along public highways, especially when such stabilizing means are positioned at the sides of the machine.

The object of the present invention is to provide an earthworking machine with stabilizing means which are so positioned and arranged as to provide optimum stabilizing effect when the machine is in use without however constituting a source of danger or contravening traffic regulations when the machine is being driven along a public highway.

With this object in view the earth-working machine according to the invention comprises an endless track or wheeled chassis a turret rotatably mounted on said chassis and carrying an earth-working implement and stabilizing means mounted on said chassis wherein said stabilizing means comprises a rotary support rotatably mounted on said chassis about an axis coaxial with the turret axis, stabilizing legs mounted on said support and each provided at its outer free end with an anchoring shoe having a length not greater than the overall width of the machine.

In order that the invention may be more clearly understood one particular embodiment thereof will now be described, by way of example, with reference to the accompanying drawings in which:

FIG. 1 is a diagrammatic side elevation of an earth-working machine, in the form of a mechanical excavator, according to the invention,

FIG. 2 is a perspective view illustrating the arrangement for mounting the stabilizing means on the machine chassis,

FIG. 3 is a plan view of FIG. 2,

FIG. 4 is a part sectional side elevation of a means on the machine chassis, and

FIG. 5 is a modified arrangement for mounting the rotary turret and the stabilizing means on the machine chassis and for locking the turret and stabilizing means in position.

Referring to these drawings the earth-working machine, in the form of a mechanical excavator comprises a chassis 1 mounted on endless tracks 2 and having a rotary turret 3 rotatably mounted on said chassis about a vertical axis. The rotary turret carries means, indicated generally at 4, for carrying out earth-working operation, said means comprising a jib 5 articulated at 6 to said turret and having pivoted to its outer free end at 9 a lever 8 to which is pivotally mounted an earth-working implement in the form of a scoop 11. Operation of the jib 5, lever 8 and scoop 11 is effected in known manner by hydraulic rams 7, 10 and 12 respectively.

In accordance with the present invention the earth-working machine is provided with stabilizing means for stabilizing said machine while carrying out earth-working operations, said stabilizing means comprising a rotary support 13 to which two stabilizing legs 14, 15 are pivotally mounted at 16 and 17 respectively on diametrically opposite sides of said support 13. Each of said stabilizing legs 14, 15 is provided at its outer free end with an anchoring shoe 21 and 22 respectively and said stabilizing legs are pivotable by rams 18 and 19 respectively into an operative position, in which the anchoring shoes are in contact with the ground, or in an inoperative position, in which said anchoring shoes are out of contact with the ground.

The rotary support 13 is rotatably mounted on the chassis 1, between said chassis and the rotary turret 3, about a vertical axis coaxial with the turret axis. The rotary support 13 can be locked in one of at least two positions by locking means 20 which comprises a locking pin which passes through a perforated lug or projection on said rotary support 13 and engages in a hole in a fixed part of the chassis 1 as indicated in FIG. 4 and 5. The locking means 20 are so arranged that said rotary support 13 can be locked in one position in which the stabilizing legs project fore and aft of the machine substantially parallel to the longitudinal axis of the machine i.e., in the inoperative positions of said stabilizing legs (FIG. 1), or in a second positions in which the stabilizing legs project outwards from the lateral sides of the vertical at right angles to the longitudinal axis of the vertical i.e., in the operative positions of the stabilizing legs (FIG. 2).

The mounting of the rotary turret 3 and the rotary support 13 on the chassis 1 of the machine may be carried out in any suitable manner, for example as illustrated diagrammatically in FIG. 4 or FIG. 5.

In the embodiment illustrated in FIG. 4 the rotary support 13 is mounted on a ring of roller bearings 24 carried on the chassis 1 and said support 13 carries on its upper part a second ring of roller bearings 23 upon which the turret 3 is rotatably mounted. Around the periphery of the ring of the roller bearings 23 is a crown wheel 25 with which meshes a pinion 27 fixed on the driving shaft of a motor 26 carried by the turret and by which said turret is rotated.

In the embodiment illustrated in FIG. 5 the rotary turret 3 and the rotary support 13 are rotatably mounted on rings of rollers bearings 28 and 29 respectively in a similar manner to that of FIG. 4 except that in this embodiment the ring of roller bearings 28 on which the turret is rotatable is not carried by the rotary support 13, as in FIG. 4, but on an extension (not shown) of the chassis which passes up through the rotary support 13. In the embodiment of FIG. 5 the turret 3 is rotated by a motor 26 through a pinion 27 and crown wheel 25 but in this embodiment locking means 30, similar to the locking means 20 above described, are provided for locking the turret 3 and the rotary support 13 together so that said turret and rotary support can be rotated simultaneously by the motor 26.

When, with an earth-working machine according to the invention, it is necessary to transport the machine from one site to another along public highway the rotary turret is rotated to position the jib 5 and its earth-working implement into the position shown in FIG. 1 and the rotary support 13 is rotated to position the stabilizing legs 14 and 15 fore and after of the vehicle and the ram 18, 19 are operated to raise the stabilizing legs 14, 15 and their anchoring shoes 21, 22 into the inoperative position as shown in FIG. 1. When the turret 3, rotary support 13 and stabilizing means 14, 15 are in the position as shown in FIG. 1 the turret and rotary support are locked in said positions by the locking means 20, 23 so that the machine can then be driven safely along a public highway without the stabilizing means or the jib and earth-working implement being a danger to other traffic.

When the earth-working machine is to be used for excavating or other heavy earth-working operations the locking means 20, 30 are released. The rotary support is rotated to position the stabilizing legs 14, 15 so that they project laterally from each side of the machine and the rams 17, 18 are operated to move the anchoring shoes 21 and 22 into contact with the ground as shown in FIG. 2. The anchoring shoes are of such a size as to engage the ground over as great an area as possible to enhance stabilization, but their length must not be greater than the overall width of the machine so as to ensure that they do not project beyond the sides of the machine when it is being driven along a public highway.

In order to reposition the jib 5, the earth-working implement 11 and the stabilizing legs 14, 15 from the inoperative position (FIG. 1) to the operative position (FIG. 2) by the means illustrated in FIG. 4, the locking means 20 is first released so that the support 13 can rotate relative to the chassis 1.

sis 1. The earth-working implement is lowered to the ground so as to immobilize the turret 3 relative to the support 13. The motor 26 is then operated so that the support 13 is rotated through pinion 27 and crown wheel 25 to bring the stabilizing legs into operative position. The locking means 20 is then again locked and the stabilizing legs are lowered to bring their anchoring shoes into contact with the ground whereupon the earth-working implement is raised so that the turret 3 can be rotated relative to the chassis by means of the motor 26.

In order to position the jib 5, the earth-working implement 11 and the stabilizing legs 14,15 in to operative position (FIG. 2) from the inoperative position (FIG. 1) by the means illustrated in FIG. 5, the locking means 20 is released while the locking means 30 remain in locked position. In this way turret 3 and the rotary support 13 are rotated together, by means of the motor 26. The stabilizing legs are then lowered into their operative position and the locking means 20 again locked so that operation of the motor 26 effect rotation of the turret 3 as described.

It is to be understood that the invention is not limited to the particular embodiment herein described but modifications can be made without departing from the scope of the invention as defined in the appended claims. For example, the earth-working machine may be provided with a wheeled chas-

sis instead of an endless track chassis as shown.

I claim:

1. An earth-working machine, such as a mechanical excavator, comprising an endless track or wheeled chassis, a turret rotatably mounted on said chassis and carrying an earth-working implement and stabilizing means mounted on said chassis, said stabilizing means comprising a rotary support rotatably mounted on said chassis about an axis coaxial with the turret axis, stabilizing legs mounted on said support and each provided at its outer free end with an anchoring shoe having a length not greater than the overall width of the machine.

2. An earth-working machine according to claim 1, wherein said stabilizing legs are pivotally mounted on said rotary supports and ram means are provided for moving said legs into operative or inoperative position.

3. An earth-working machine according to claim 2 wherein means are provided for locking said rotary support and said turret in their operative or inoperative position.

4. An earth-working machine according to claim 1, wherein locking means are provided for locking said rotary support in the position in which the stabilizing legs are in operative position or in a position in which the stabilizing legs are in inoperative position.

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