

[54] **MOBILE WORKING MACHINE**

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[58] Field of Search **214/138; 37/103**

[56] **References Cited**

FOREIGN PATENTS OR APPLICATIONS

1,103,692 5/1955 France 214/138
1,519,756 2/1968 France 214/138

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[57] **ABSTRACT**

Only a single pair of ground wheels are mounted on a platform of a movable working machine, and this single pair of ground wheels carried by individual respective stub axles located on the ends of the arms movably journaled in locations outside mounting of the source of energy for the machine on the platform, provide structure movable by means for lowering the pair of ground wheels alternately clockwise and counterclockwise even passing the source of energy of the machine into rearward and forward differing ground positions respectively, and raising the wheels off the ground to an intermediate position.

5 Claims, 5 Drawing Figures

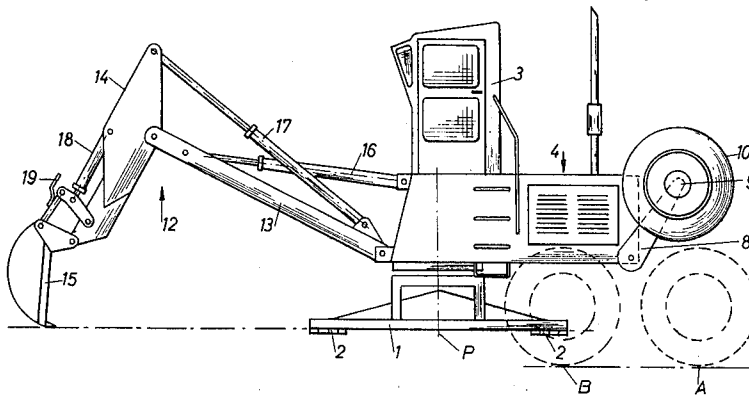
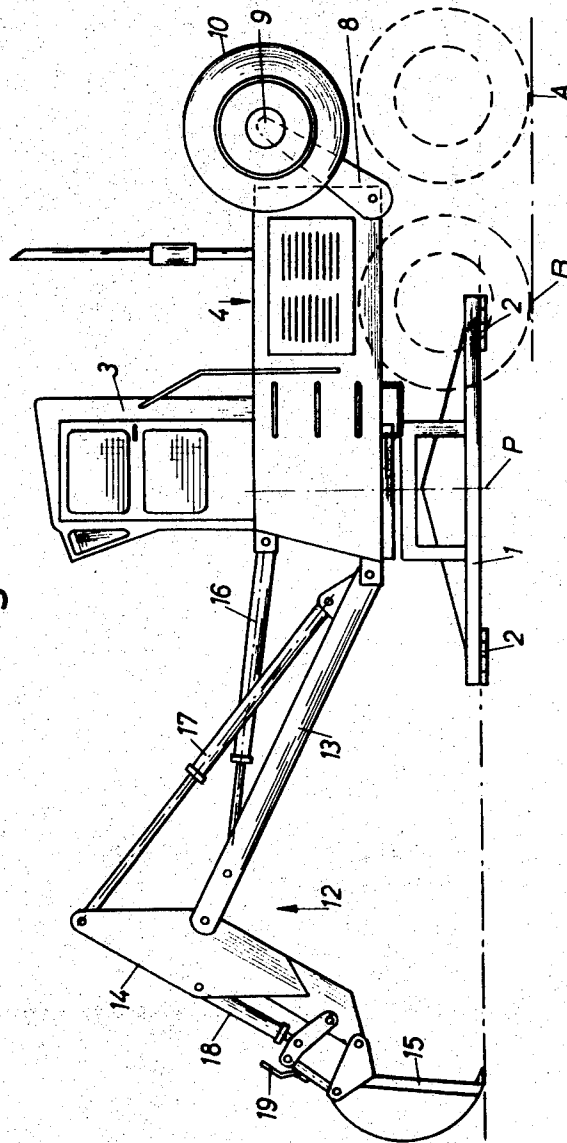
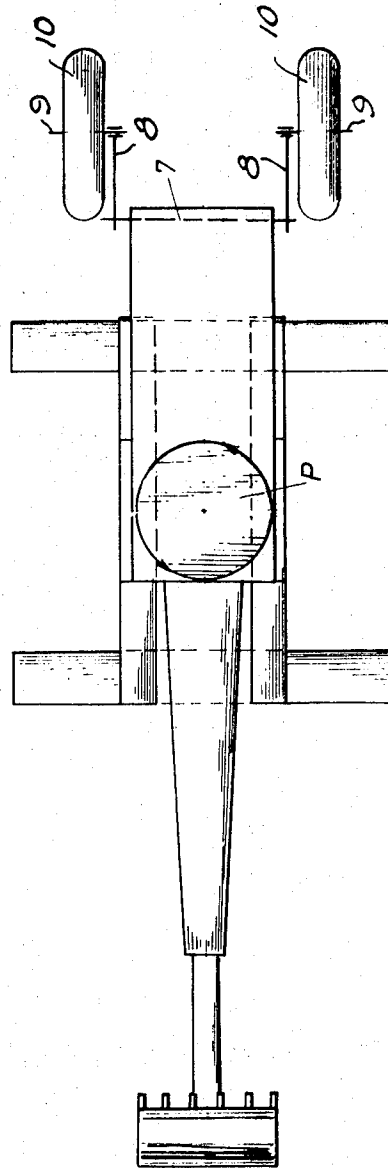


Fig. 1



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Fig. 2



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Fig.3

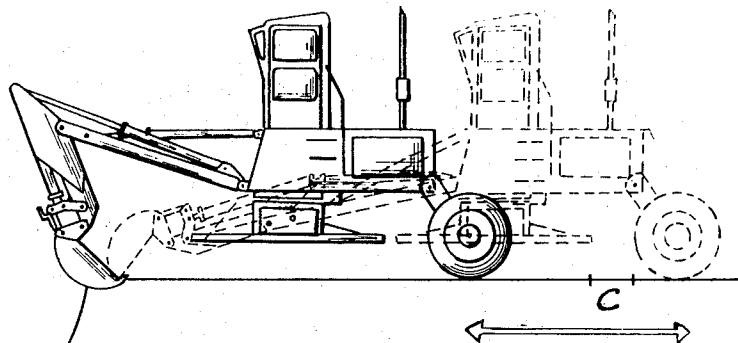


Fig.4

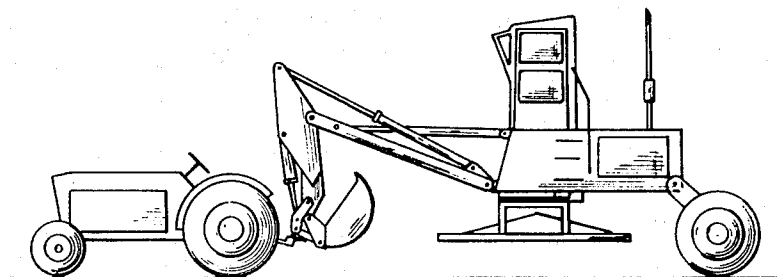
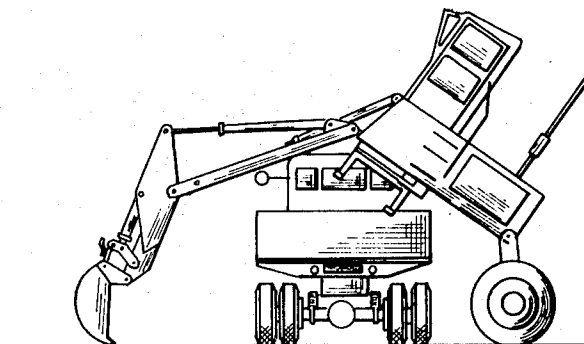


Fig.5



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MOBILE WORKING MACHINE

The present invention relates to a mobile working machine and has particular reference to an excavator of the kind which is pivotally mounted on a bottom part and provided with an articulated jib extending on one side of the machine and movable in a vertical plane about an axis of rotation of the machine, the positions of the individual joints of the jib being powered by, for example, hydraulic devices, and the source of the energy of the machine being located on a platform on the opposite side of the machine.

The object of the invention is to provide a working machine which is able to move by means of its own source of energy without the use of tracks, for example, those known under the Registered Trademark "Caterpillar," or driven wheels.

According to the present invention, the mobile working machine has its bottom part provided with removable solid supports, while at the rear end of the platform are ground wheels with means for lowering the wheels to the ground in one of two positions and raising them off the ground to an intermediate position.

In this way a machine is capable of standing independently in the field on its base, and is capable of being moved in any direction with its wheels on the ground and secured in one of the ground positions, the extreme joint of the jib being lowered, thereby causing the digging tool to abut on the ground, and enabling the excavator with its bottom part to be lifted clear of the ground by means of the jib, so that in this position it will rest only on the digging tool and the pair of wheels, and by activating the jib the various arms of the jib can be caused to form different angles with each other, as a result of which the wheels and consequently the excavator can be shifted towards the digging tool or away from it.

Moreover the machine may be moved also over ditches by changing the wheel positions.

The machine may be provided with means for coupling it to a vehicle for towing purposes. The means may comprise an apertured rod attached to the working tool of the machine.

By way of example only, a machine embodying the invention will now be described in greater detail with reference to the accompanying drawings of which:

FIG. 1 is a side view of the machine,

FIG. 2 is a schematic top view of the machine,

FIG. 3 is a side view on a smaller scale of the machine when it is about to be moved in the normal way,

FIG. 4 is a side view on a smaller scale of the machine connected to a tractor, and

FIG. 5 is a side view on a smaller scale of the machine ready for loading onto a truck.

The machine shown in the drawings is an excavator whose bottom part 1 rests upon two removable supports 2. The bottom part 1 and the supports 2 each is of a lateral extension such that the vertical line through the center of gravity of the machine will, under all circumstances, lie within the outer contour defined by the supports.

The excavator can be swung round in relation to the bottom part on a vertical pivot P, which is located in the bottom part. Three is a cabin for an operator and 4 is a source of energy for the excavator, which may for instance be a diesel engine, and which is located on a platform 5. At the rear end of the platform short axles 7 are mounted, or alternatively a single shaft, on which arms 8 are pivotally mounted, the free ends of the arms carrying stub axles 9, on which are mounted wheels 10. Each of the arms is capable of being swung in such a way that the wheels are swung from the position A shown in FIG. 1 in dotted lines through the position shown in full lines and to the position B shown in dotted lines and back again in opposite direction to position A.

At the other end—the front end—of the excavator is an articulated jib 12 which is of known design and has two arms 13 and 14 and a component 15 designed as a working tool, principally a digging tool. The positions of the said arms in relation to each other and their positions in relation to the operator's cabin are controlled from the operator's cabin by hydraulic

devices 16, 17 and 18. A short apertured rod 19 is attached to the side of the digging tool facing away from the machine.

The excavator is normally operated in the position shown in FIG. 1, i.e., resting on the supports 2 and with the wheels 10 elevated to the position shown in FIG. 1 in full lines.

To move the excavator to another adjacent working position, the jib 12 is first lowered until the digging tool 15 rests on the ground, the wheels 10 are lowered to the ground to the position A and are then locked in this position. Then, the hydraulic devices 16, 17 and 18 are activated so as to lift the bottom part 1 of the machine clear of the ground. Now, if the angle between the arms 13 and 14 of the jib is then reduced, the machine will move towards the digging tool. Conversely, if the angle between the arms 13 and 14 is increased, the machine will move away from the digging tool. These features appear from FIG. 3 in the drawing, showing the machine in dotted line after a short move has been effected.

If the wheels during movement of the machine from the position shown in dotted lines in FIG. 3 approach a ditch, indicated by C in FIG. 3, the wheels and the jib are activated to raising the machine so that it rests on the supports at the left side of the ditch. Then the wheels are raised and swung around counterclockwise to position B in FIG. 1 to rest on the left side of the ditch. Thereupon the machine can be moved to the ditch, the machine again raised to rest on the supports, and the wheels swung clockwise to position A in FIG. 1 to rest on the right side of the ditch as in dotted lines in FIG. 3, and the machine moved again as previously described.

To move the excavator over longer distances, it can either be coupled to and towed by a tractor or, if even longer distances are involved, the excavator is loaded onto a truck and transported by the latter.

To couple the excavator to a tractor, the short rod 19 is attached to the tractor tow bar using the aperture in the rod. If necessary the positions of the arms 13 and 14 and that of the digging tool 15 are adjusted to permit the attachment of the rod 19. By suitably operating the controls of the hydraulic devices 16, 17 and 18 the excavator can be lifted to the position shown in FIG. 4 in which the the bottom part 1 is clear of the ground and the excavator is supported between the tow bar and the wheels 10 and the supports 2 have been removed, so that no parts extend sidewise from the platform.

FIG. 5 shows how the excavator can be loaded onto and unloaded from a truck suitable for transporting the excavator. Starting from the normal working position with the excavator resting on its bottom part 1 and with the wheels 10 elevated, the loading procedure is as follows. The wheels 10 are first lowered to the ground after which the jib is first operated to bring the working tool into contact with the ground and then to lift the excavator into the position shown in FIG. 5 where the supports are moved. The truck is then backed into a position to receive the bottom part 1, the excavator then being transverse with respect to the truck. The jib is then used to lower the excavator onto the truck. The wheels 10 are lifted and the jib raised after which the excavator is rotated to a lengthwise position on the truck to ensure that no part of the excavator extends beyond the sides of the truck. To unload, the procedure just described is followed in reverse.

What I claim is:

1. A mobile working machine having a platform at one end of which is mounted an articulated jib movable in a vertical plane, a source of energy for the machine being mounted at the other end of the platform operating said jib, the platform being mounted for rotation about a vertical axis on a support member located beneath one end of the platform, the machine having a single pair only of ground wheels mounted on arms pivoted to the outer sides of the platform on the other end thereof and movable from an upper, intermediate position to either of two lower, ground engaging positions, in a rearward position to the rear of and below said platform, or in a forward position alongside of and below said platform, means being provided for lowering the pair of ground wheels to the ground alternately clockwise and counterclockwise to either of said

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two positions while capable of clearly passing by the source of energy of the machine and in one of said two rearward and forward differing ground positions respectively and raising them off the ground to an upper position out of ground contact.

2. A machine according to claim 1 in which there is provided means for coupling the machine to a vehicle for towing purposes.

3. A machine according to claim 2 in which the means com-

prises an apertured rod attached to a working tool of the machine.

4. A machine according to claim 3 in which the wheels are rotatably journaled on stub axles and mounted on arms located outside the source of energy for the machine and pivotally attached to the rear end of the platform.

5. A machine according to claim 4 in which the means comprise hydraulically operated devices coupled to the arms.

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