United States Patent

Dunaevsky et al.

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[54] **EXCAVATOR**

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[51] **Int. Cl.** **B60g 17/00**

[58] **Field of Search** 280/6, 6.1, 6.11; 180/9.2, 180/9.5; 172/4.5; 56/212

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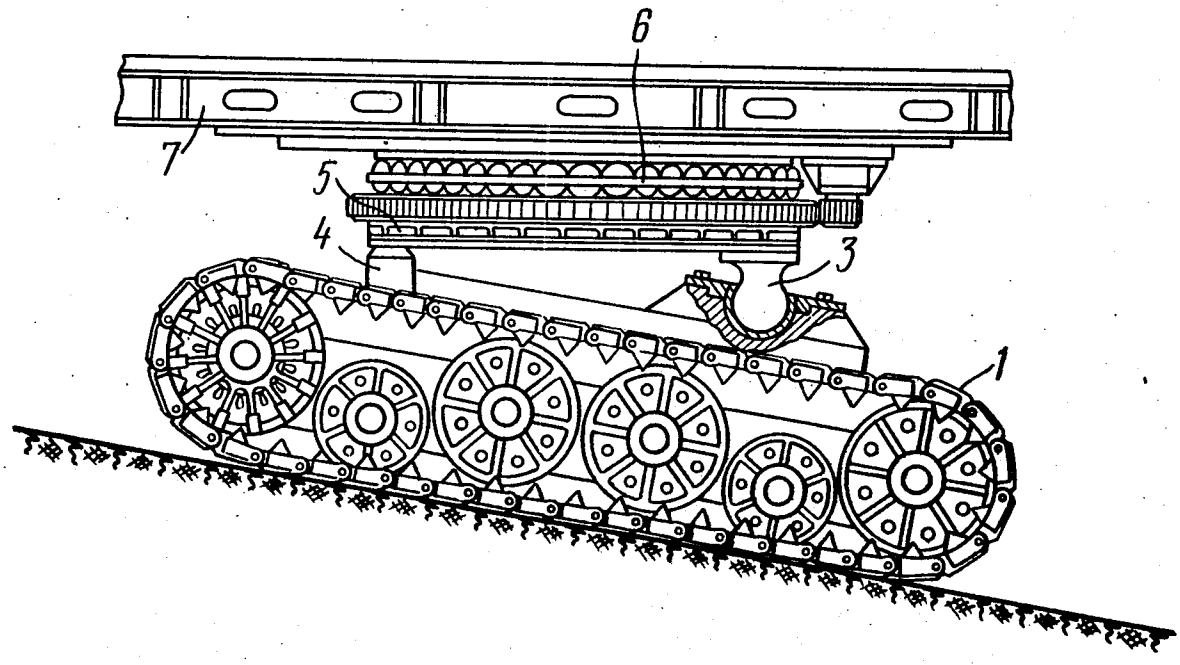
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[57] **ABSTRACT**

An excavator wherein its machinery deck rests on the undercarriage frame so that said machinery deck retains a horizontal position regardless of the inclination angle of the undercarriage.

2 Claims, 2 Drawing Figures



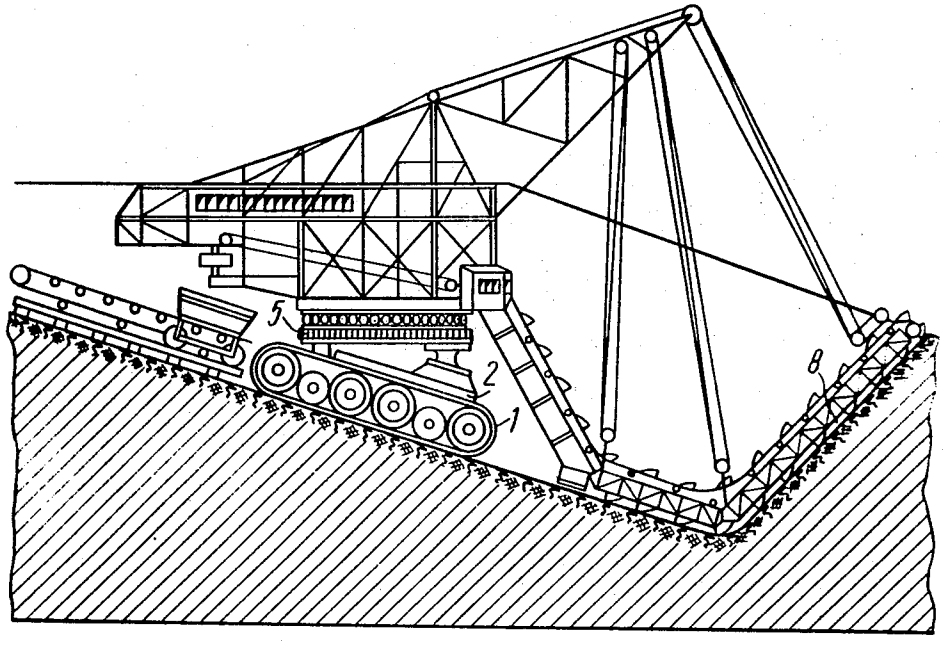


FIG. 1

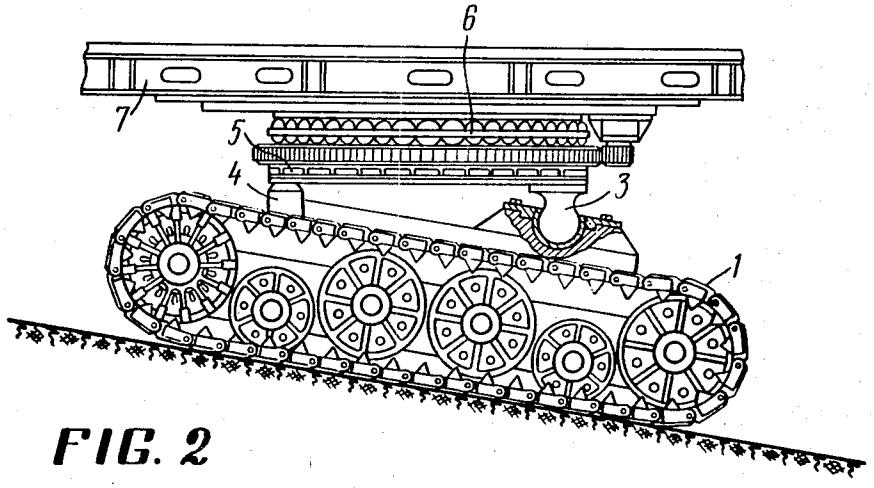


FIG. 2

EXCAVATOR

The present invention relates to outrigger excavators equipped with any type of interchangeable attachments.

At present, the machinery deck of the excavators is mounted so that it is always parallel to the base of the crawler tracks at any inclinations of the excavator caused by the irregularities of the ground contour. As a result, there is a danger of capsizing when the excavator is operated on slopes whose angles exceed the maximum allowable angles for each type of the working attachment.

This angle, as a rule, equals 1.5°.

To avoid the danger of capsizing on steep slopes, it becomes necessary, before using the excavator, to perform a large amount of auxiliary operations such as levelling of the working site by the excavator proper or by other auxiliary earth-moving machines.

Besides, even at allowable angles of excavator inclination there occurs a considerable nonuniformity in the distribution of weight along the length of the crawler tracks which causes twisting forces in the excavator undercarriage.

This imposes additional demands on the stiffness and strength of the undercarriage.

In the case of heavy excavators it becomes altogether impossible to build an undercarriage which is sufficiently strong so as not to be deformed in slanting positions. This calls for more complex systems involving more than two crawler tracks and devices for uniform distribution of weight on the tracks.

An object of the invention resides in eliminating the aforesaid disadvantages.

The main object of the invention is to provide an excavator whose supporting frame will automatically occupy a horizontal position irrespective of the position of its undercarriage.

This object is achieved by providing an excavator whose supporting frame rests on the undercarriage frame via a ball support and power jacks communicating with a pressure-equalizing mechanism.

For excavators with a revolving machinery deck, it is necessary that said machinery deck should rest on the ball support and power jacks via a plate which is non-revolving in a horizontal plane.

Now the invention will be described in detail with reference to the accompanying drawings in which:

FIG. 1 is a side elevational view showing an excavator according to the invention, in the working position, and operating at inclination angles greater than heretofore allowable; and

FIG. 2 is an enlarged side elevational view, partly in section, which shows a fastening unit of the revolving machinery deck of the excavator.

The excavator comprises an undercarriage 1 with a frame 2 on which a non-revolving plate 5 is installed with the aid of a ball support 3 FIG. 2) and hydraulic power jacks 4. The hydraulic power jacks 4 are in communication with a pressure-equalizing mechanism (not shown).

The pressure-equalizing mechanism is not described here in detail since it is a widely known device intended to automatically equalize pressure in the chambers of the hydraulic jack with which it is in communication.

Mounted on the plate 5 with the aid of a bearing 6 is a revolving machinery deck 7 accommodating a machinery room and the working equipment.

The working element of the excavator is a bucket chain 8.

Due to such a mounting of the revolving machinery deck 7, the excavator is capable of working on slopes with up to 30° inclination.

If the crawler undercarriage 2 of the working excavator is other than horizontal, the pressure fluid can be forced out of the hydraulic jacks 4 under the weight of the deck 7 and equipment mounted on it, or, on the contrary, be forced into the hydraulic jacks thus keeping the plate 5 and, together with it, the machinery deck 7 in a horizontal position.

Pressure is adjusted in the hydraulic jacks 4 by means of the pressure-equalizing mechanism which automatically maintains the required pressure in the system so as to keep the plate 5 and revolving deck 7 horizontal irrespective of the position of the crawler undercarriage.

We claim:

1. An excavator comprising an undercarriage; crawler tracks on said undercarriage for travel thereof on the ground; a rigid frame on said undercarriage; a machinery deck; means supporting said machinery deck on said frame to maintain the deck in horizontal attitude irrespective of the position of the frame, said means comprising a plate which is non-revolving in the horizontal plane, means rotatably supporting the machinery deck on said plate, a ball support between the plate and frame, and jack means between the plate and frame at a location spaced from said ball support.

2. An excavator as claimed in claim 1 wherein said jack means comprises a plurality of jacks each at a location spaced from the ball support.

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