

ABSTRACT:

The subject of the invention are foldable weights attached to the three-point suspension system (TUZ) with an adjustable center of gravity, cooperating in particular with agricultural tractors, but also with working and self-propelled machines such as: telescopic loaders, mini loaders equipped with TUZ.

The proposed weight designs are designed to load the front or rear axle of a tractor or self-propelled machine with the possibility of adjusting the distance of the center of gravity of the weight in relation to the center of gravity of the tractor or self-propelled machine. By changing the center of gravity, we can achieve greater functionality in the form of maintaining the assumed traction and controllability of the tractor or self-propelled machine, in particular the front axle in the situation of aggregation (cooperation) with machines, devices, or equipment of variable length and weight. The use of a variable center of gravity will reduce the unfavorable phenomenon of wheel slippage, which has a beneficial effect by reducing fuel consumption during agrotechnical treatments, loading or cleaning work, and is therefore a pro-ecological aspect reducing the emission of toxic compounds into the natural environment.

The design of the counterweights allows for a smooth change of the center of gravity from the operator's cab by lifting or extending it. Changing the center of gravity, and thus the load on the front or rear axle of an agricultural tractor or self-propelled machine, does not require the troublesome and laborious procedure of disconnecting and re-attaching a counterweight of a different mass. A specific application of this type of counterweight can be found in cooperation with the electronic optimization system of tractor performance introduced by, for example, Claas (CEMOS system), New Holland (PLM Intellisteer system) or Fendt (FendtONE system).

Patent application no. P. 447915:

Counterweight for agricultural tractors, working machines, and self-propelled machines attached to a three-point suspension system with an adjustable center of gravity.

The design of this solution consists of a main frame with a three-point suspension system on which a movable swinging frame lifted by actuators is mounted. The movable frame is attached to a counterweight box, which can be made using various technologies, which are described in patent application no. P.445407. Hydraulic, pneumatic, or electric actuators are advantageously used for the procedure of changing the center of gravity, i.e., during lifting and lowering of the movable frame (Figs. 1 and 2).

Patent application no. P.445407:

Counterweight to weigh agricultural tractors with adjustable center of gravity.

The design includes a main frame consisting of guides in the form of I-beams connected to a three-point suspension system. The counterweight is extended or retracted using a system of four bearings rolling inside the I-beam frame. This movement can be performed using a ball screw driven advantageously by a hydraulic, pneumatic, or electric motor (Figs. 3 and 4). In addition, the frame can be folded manually or using hydraulic, pneumatic, or electric actuators for transport, shortening the working length and improving work safety.

The counterweight box can be made of cast iron, reinforced concrete, magnetite, or as a sealed tank filled with any liquid. The counterweight box is preferably filled with granular or loose materials, e.g., in the form of sand, field stones, and others that are available free of charge on every farm. Optionally, a transport hitch, toolbox, or dedicated holders, e.g., for a fire extinguisher, a catch crop seeder, or lighting, can be mounted on the counterweight box.