



PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in or relating to Stands for Vehicles, particularly for Agricultural, Horticultural and like Power Driven Implements.

We, THOMAS ARTHUR HILL, a British Subject, of 20, Gladstone Terrace, Grantham, Lincolnshire, and BARFORD (AGRICULTURAL) LIMITED, a British Company, of Grantham, Lincolnshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement :—

5 This invention relates to means for supporting and steadying vehicles, particularly a light-duty agricultural or horticultural vehicle of the type provided with an internal combustion engine for driving a single ground-engaging wheel or rotor, such vehicle being adapted to receive soil working tools and being provided with a handle or handles by which the vehicle may be manually manoeuvred by a walking operator.

10 The object of the present invention is to provide simple and efficient means for supporting and steadying the vehicle with the tools off the ground when it is not being used so that it will not topple over sideways due to its unbalanced condition resulting from its single wheel construction.

15 According to the present invention, there is provided means for supporting and steadying a light-duty agricultural or horticultural vehicle of the type above referred to which comprises a shaft rotatably supported to one side of the vehicle approximately parallel to its longitudinal axis, and at least two spaced apart legs secured to said shaft and adapted to be swung as a unit from an inoperative position in which they extend upwardly from the shaft to an operative position in which they extend downwardly from the shaft and outwardly from the side of the vehicle, means being provided for retaining the legs in both operative and inoperative positions.

20 Preferably, the shaft ends are journaled in lugs provided on one of the longitudinal side frame members of the chassis and the unit comprising the shaft and legs is

[Price 2s. 8d.]

removable by releasing retaining means at one end of the shaft, e.g. a split pin and then moving the shaft axially in one direction to disengage one end of the shaft from the associated lug and then tilting and moving the shaft in the opposite direction to remove its other end from the remaining lug.

Referring now to the accompanying drawings.

Fig. 1 is a side elevation of a vehicle of the type above referred to provided with one form of supporting and steadying means therefor according to the present invention.

Fig. 2 is a side elevation, on an enlarged scale, of the supporting means in the operative position.

Fig. 3 is an end elevation corresponding to Fig. 2.

The vehicle illustrated in Fig. 1 comprises a main frame or chassis 1 which is normally disposed in a horizontal or approximately horizontal plane and this frame supports an internal combustion engine 2 and a gear box 3 through which the drive is transmitted by a chain drive enclosed in a casing 4 to a single ground wheel 5 upon which the frame is mounted. The ground wheel may be replaced by a rotor having strakes, spuds or other land-engaging surfaces. The engine is mounted off centre nearer one end of the chassis, and for convenience this end will be referred to as the front or forward end, although in use the direction of movement of the vehicle may be in either direction. The frame is provided at both ends with means for receiving soil working implements which would usually be fitted at the rear end; at this end there is fitted two rearwardly extending handles to facilitate steering, these handles being fitted respectively with clutch and throttle controls, and said handles are easily detachable. Part of a handle bar 6 is illustrated in Fig. 1 detached from the rear end of a frame member 7.

Secured to one of the longitudinal side members of the main frame or chassis 1 are

two spaced apart lugs 8 which extend outwardly and upwardly from the frame member and these lugs are formed with axially aligned holes forming bearings for receiving the ends of a shaft 9 which bridges the lugs and upon which are mounted two legs 10, 11 in the form of bars which are formed at their outer or ground-engaging ends with feet 12, 13 respectively which prevent or minimise the tendency of the legs sinking into soft ground.

These legs are relatively immovably secured to the shaft, e.g. by welding, and the leg 10 at the rear end of the shaft 9 abuts lightly against the front face of the rear lug 8 and, where the shaft projects through the lug to the rear face thereof, it is fitted with a washer 14 and split pin 15, Figs. 2 and 3. The forward leg 11 is secured to the shaft 9 a short distance behind the forward lug 8 so that when it is desired to remove the shaft with the legs thereon the split pin 15 and the washer 14 at the rear end of the shaft can be removed and the shaft moved forwardly axially to clear its rear end of the rear lug 8 and then tilted and moved rearwardly to disengage the front end of the shaft from the front lug, the spacing of the upper end of the forward leg behind the front lug permitting the forward movement of the shaft to free its rear end.

The ends of the shaft are freely mounted in the holes in the lugs 8 so as to turn therein and permit the legs 10, 11 to be swung from an inoperative position, Fig. 1, in which they extend approximately vertically upwards from the shaft to a ground-engaging position, Figs. 2 and 3, in which they incline downwards and away from the side of the vehicle. When the legs are in a ground-engaging position the vehicle is supported and balanced at three points, namely by the single wheel 5 and the two legs 10, 11.

When the vehicle is at rest with the legs in their supporting positions the vehicle is inclined to the horizontal forwardly to move the tools at the rear end thereof out of the ground and for this reason the front leg 11 is made shorter than the rear leg 10, as shown in Fig. 1, to compensate for the inclination. This front leg inclines downwardly and forwardly when viewed with the main frame horizontal, as shown in Fig. 3, so that when the frame is tilted forwards to a resting position the feet of both legs rest on the ground in suitable positions to afford the best support. Also, when at rest the vehicle is tilted slightly towards one side, i.e. the side having the legs so that the vehicle is moved over a dead centre or working position and will not therefore tend to fall towards the other side.

To enable the legs to be retained in either operative or inoperative positions, the rear face of the rear lug 8 has pivoted thereto at

16 a hook 17 which engages over a pin 18 extending rearwardly from the rear face of the rear leg 10 when the leg is in either of its two extreme up and down positions. To ensure that the hook is locked in engagement with the pin in either of these two positions and will not become accidentally disengaged therefrom the pivoting radius of the hook is made greater than the radius of the arc passed through by the pin when the leg is swung up and down. In other words the distance between the axis of the shaft 9 about which the leg 10 swings and the pin 18 is less than the distance between the pivoted end of the hook 17 and the centre of its hooked end.

To lift the feet from a ground engaging position the vehicle is brought into a vertical position by the handles 6 and the legs 10, 11 will fall downwardly so that the pin on the rear leg will move out of engagement with the hook and the hook can then be swung upwardly above the lug to which it is pivoted. The legs can then be swung upwardly and the hook again engaged over the pin on the rear leg. In practice, these operations can be easily effected with one foot of the operator so as to leave both hands free to handle the vehicle.

What we claim is:—

1. A vehicle, particularly a light-duty agricultural vehicle of the type in which an internal combustion engine is utilised to drive a single ground-wheel or rotor and provided with means for supporting and steadying the vehicle when not in use, said means comprising a shaft rotatably supported to one side of the vehicle approximately parallel to its longitudinal axis, and at least two spaced apart legs secured to said shaft and adapted to be swung as a unit from an inoperative position in which they extend upwardly from the shaft to an operative position in which they extend downwardly from the shaft and outwardly from the side of the vehicle, means being provided for retaining the legs in both operative and inoperative positions.

2. A vehicle according to Claim 1, wherein the shaft of the supporting means is removably journalled in bearings secured to the vehicle chassis and the legs are connected to the shaft at such positions in relation to the bearings that upon release of means by which the shaft is normally retained in position, the shaft may be removed by axially sliding it in one direction to disengage one end thereof from the associated bearing, whereupon the shaft may be tilted and moved in the opposite direction to remove the other end of the shaft from its associated bearing.

3. A vehicle according to Claim 1 or 2, wherein the supporting means comprises a rear leg and a front leg, of which the latter is shorter than the former so that when the

vehicle is inclined forwardly to the rest position to remove working tools at the rear of the vehicle out of the ground, the legs will engage the ground at their supporting position.

4. A vehicle according to Claims 2 and 3, wherein the legs are retained in both the operative and inoperative positions by a hook pivotally carried by the rear bearing for the shaft and adapted to engage over a pin extending from the rear leg.

5. A vehicle according to Claim 4, wherein the distance between the axis of the shaft and

the pin is less than the distance between the pivoted end of the hook and the centre of its hooked end, for the purpose hereinbefore set forth.

6. A light-duty, power-driven agricultural vehicle provided with a stand constructed and adapted for use substantially as hereinbefore described with reference to the accompanying drawings.

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PROVISIONAL SPECIFICATION.

Improvements in or relating to Stands for Vehicles, particularly for Agricultural, Horticultural and like Power Driven Implements.

We, THOMAS ARTHUR HILL, a British Subject, of 20, Gladstone Terrace, Grantham, Lincolnshire, and BARFORD (AGRICULTURAL) LIMITED, a British Company, of Grantham, Lincolnshire, do hereby declare this invention to be described in the following statement:—

This invention relates to stands of the pivoted arm or frame type for vehicles, and particularly for agricultural, horticultural and like power-driven implements of the kind designed as comparatively light-duty vehicles suitable for use by private and small-holding farmers such as those wherein an internal combustion engine is mounted on a chassis and drives a single ground engaging wheel, the chassis being adapted to have soil working tools fitted thereto and being provided with a pair of rearwardly directed handles for steering the apparatus wheelbarrow fashion. In place of a wheel, a ground engaging rotor having strakes, spuds or other land engaging surfaces may be employed.

The object of the present invention is to provide simple and efficient means for supporting and steadying the apparatus with the tools off the ground when it is not being used so that it will not topple over sideways due to its unbalanced condition resulting from its single wheel construction.

According to the present invention, there is provided means for supporting and steadying a light-duty agricultural or horticultural vehicle of the kind referred to which comprises a spindle rotatably supported to one side of the implement approximately parallel to its longitudinal axis, at least two spaced apart legs secured to said spindle and adapted to be swung as a unit from an inoperative position in which they extend upwardly from the spindle to an operative position in which they extend downwardly from the spindle and outwardly from the side of the implement, means being provided for locking

the legs in both operative and inoperative positions.

Preferably, the spindle ends are journalled in lugs provided on one of the longitudinal side frame members of the chassis and the unit comprising the spindle and legs is removable by releasing retaining means at one end of the spindle, e.g. a split pin and then moving the spindle axially in one direction to disengage one end of the spindle from the associated lug and then tilting and moving the spindle in the opposite direction to remove its other end from the remaining lug.

To enable the invention to be clearly understood, an embodiment thereof will now be described by way of example.

According to this embodiment the apparatus comprises a main frame or chassis which is normally disposed in a horizontal or approximately horizontal plane and this frame supports an internal combustion engine and a gear box through which the drive is transmitted to a single ground wheel upon which the frame is mounted. The engine is mounted off centre nearer one end of the chassis, and for convenience this end will be referred to as the front or forward end, although in use the direction of movement of the vehicle may be in either direction. The frame is provided at its both ends with means for receiving soil working implements which would usually be fitted at the rear end, and at this end there is fitted two rearwardly extending handles to facilitate steering, these handles being fitted respectively with clutch and throttle controls. The handles are easily detachable so that they may be mounted at either end of the chassis.

Secured to one of the longitudinal side members of the main frame or chassis are two spaced apart lugs which extend outwardly and upwardly from the frame member and these lugs are formed with axially aligned holes forming bearings for receiving

the ends of a spindle which bridges the lugs and upon which are mounted two legs in the form of bars which are formed at their outer or ground engaging ends with feet which prevent or minimise the tendency of the legs sinking into soft ground.

These legs are relatively immovably secured to the spindle, e.g. by welding, and the leg at the rear end of the spindle abuts lightly against the front face of the rear lug and, where the spindle projects through the lug to the rear face thereof, it is fitted with a washer and split pin. The forward leg is secured to the spindle a short distance behind the forward lug so that when it is desired to remove the spindle with the legs thereon the split pin and the washer at the rear end of the spindle can be removed and the spindle moved forwardly axially to clear its rear end of the rear lug and then tilted and moved rearwardly to disengage the front end of the spindle from the front lug, the spacing of the upper end of the forward leg behind the front lug permitting the forward movement of the spindle to free its rear end.

The ends of the spindle are freely mounted in the holes in the lugs so as to turn therein and permit the legs to be swung from an inoperative position in which they extend approximately vertically upwards from the spindle to a ground engaging position in which they incline downwards and away from the side of the apparatus. When the legs are in a ground engaging position the apparatus is supported and balanced at three points, namely by the single wheel and the two legs.

When the apparatus is at rest with the legs in their supporting positions the apparatus is inclined to the horizontal forwardly to move the tools at the rear end thereof out of the ground and for this reason the front leg is made shorter than the rear leg to compensate for the inclination. This front leg inclines downwardly and forwardly when

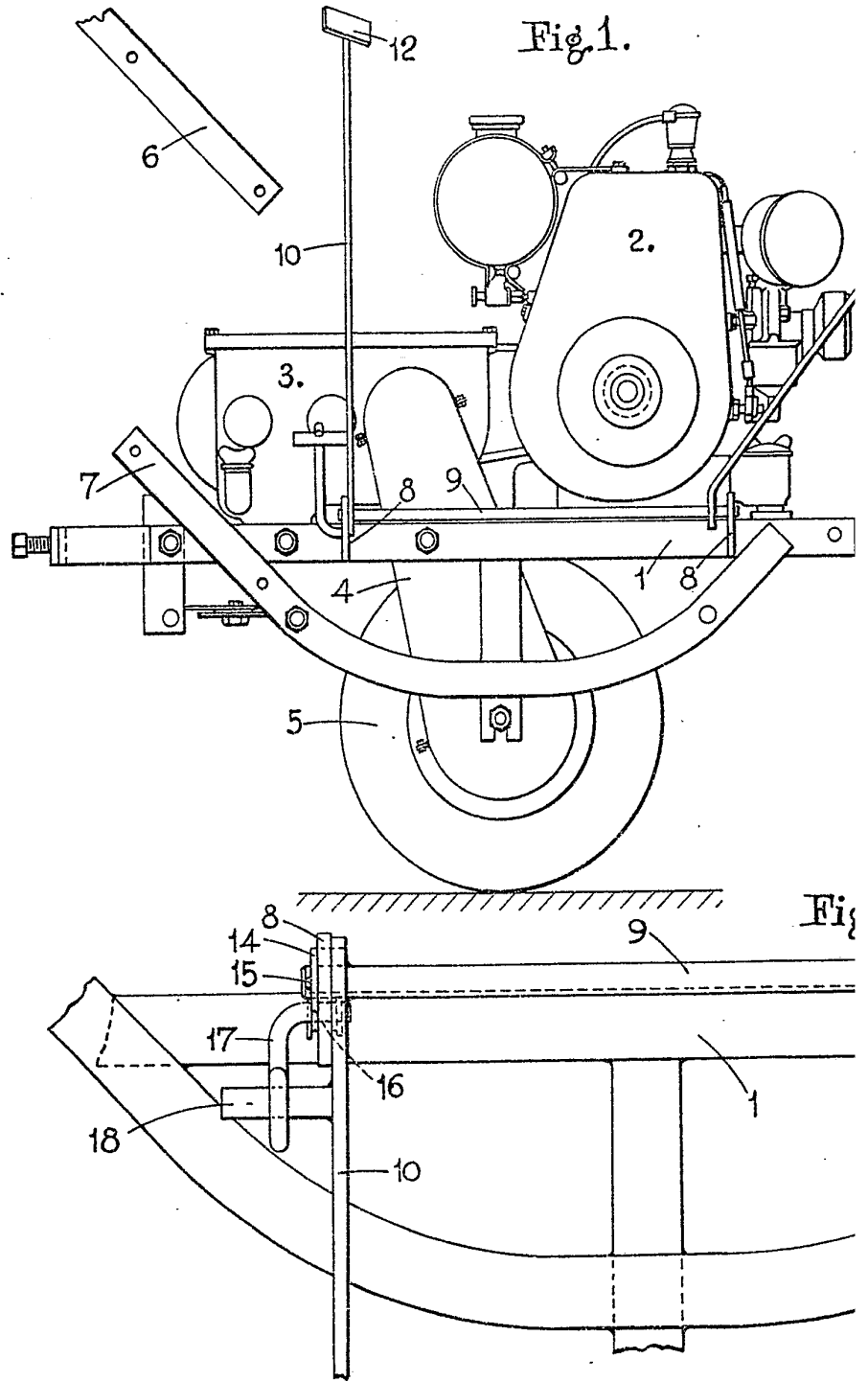
viewed with the main frame horizontal so that when the frame is tilted forwards to a resting position the feet of both legs rest on the ground in suitable positions to afford the best support. Also, when at rest the apparatus is tilted slightly towards one side, i.e. the side having the legs so that the apparatus is moved over a dead centre or to fall towards the other side.

To enable the legs to be retained in either operative or inoperative positions, the rear face of the rear lug has pivoted thereto a hook which engages over a pin extending rearwardly from the rear face of the rear leg when the leg is in either of its two extreme up and down positions. To ensure that the hook is locked in engagement with the pin in either of these two positions and will not become accidentally disengaged therefrom the pivoting radius of the hook is made greater than the radius of the arc passed through by the pin when the leg is swung up and down. In other words the distance between the axis of the spindle about which the leg swings and the pin is less than the distance between the pivoted end of the hook and the centre of its hooked end.

To lift the feet from a ground engaging position the apparatus is brought into a vertical position by the handles and the legs will fall downwardly so that the pin on the rear leg will move out of engagement with the hook and the hook can then be swung upwardly above the lug to which it is pivoted. The legs can then be swung upwardly and the hook again engaged over the pin on the rear leg. In practice, these operations can be easily effected with one foot of the operator so as to leave both hands free to handle the machine.

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This Drawing is a reproduction of the Original on a reduced scale



1.

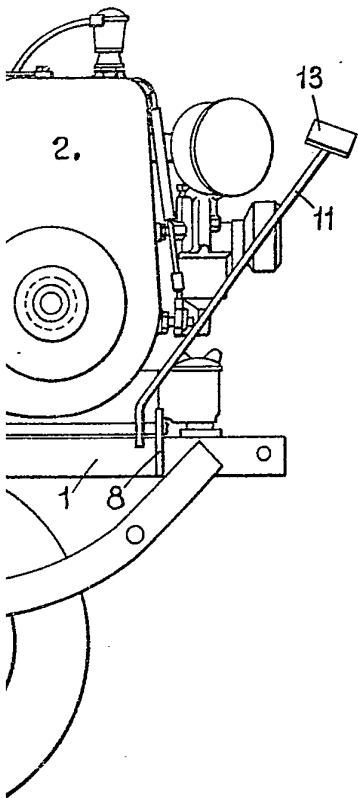


Fig. 3.

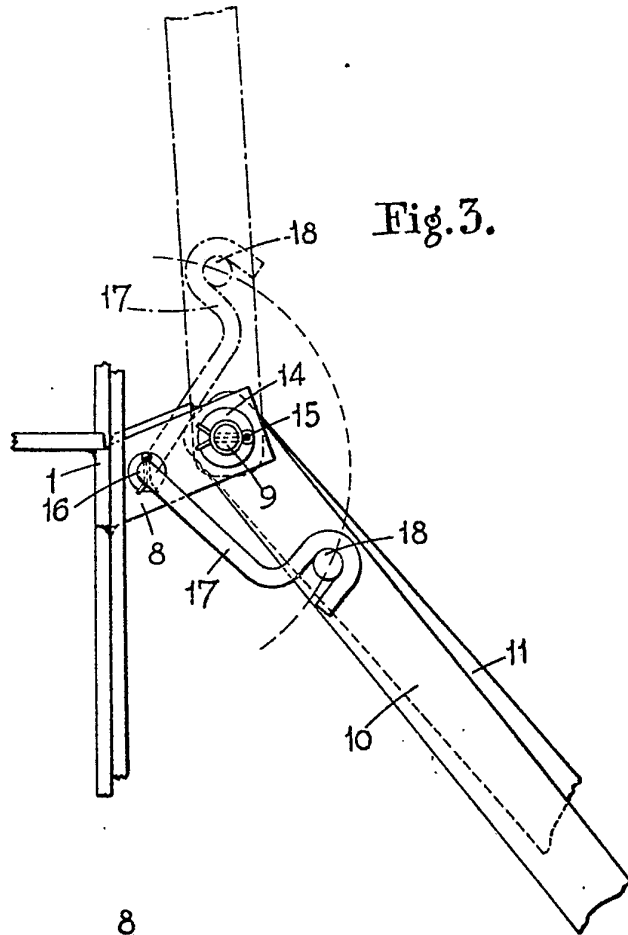
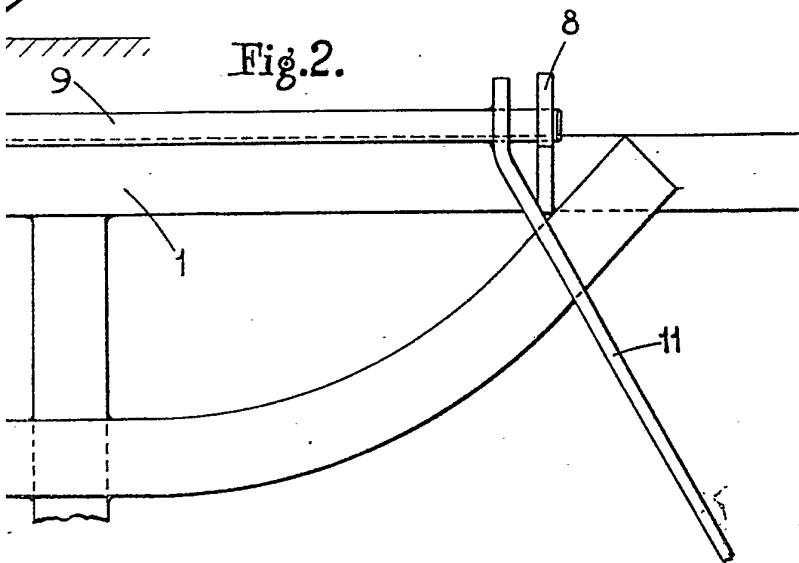
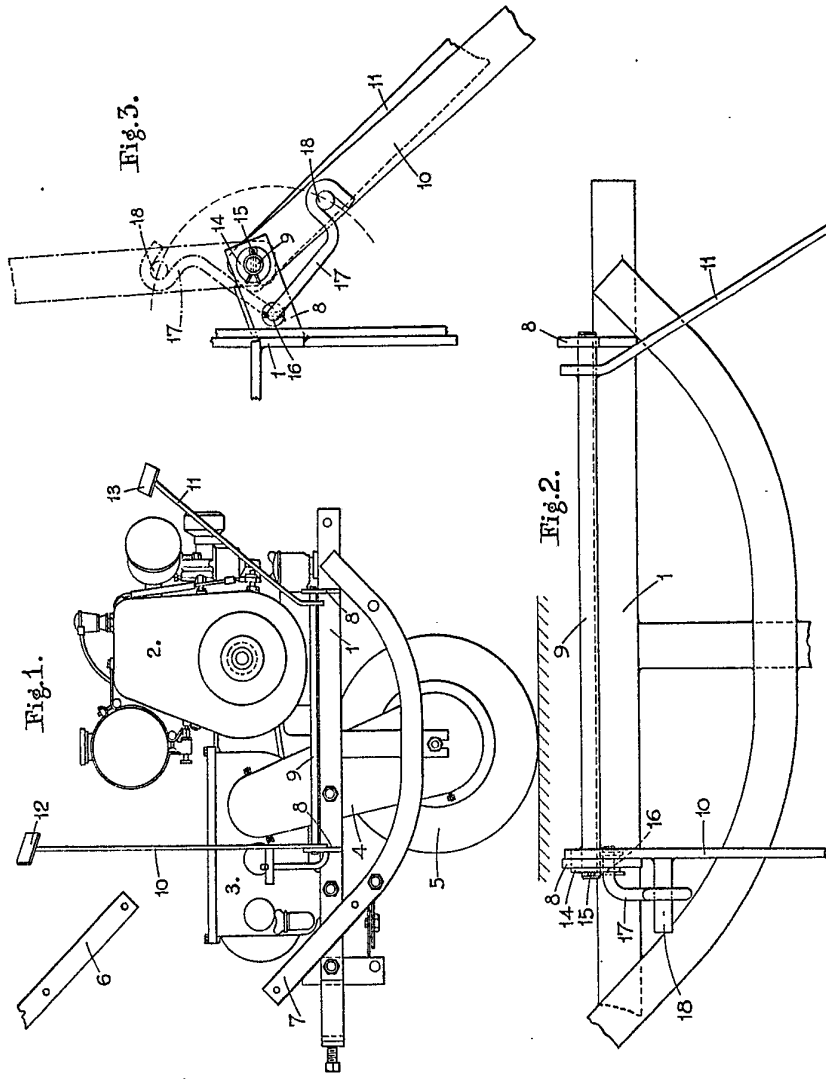


Fig. 2.





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